



## Comments of the Digital Radio Mondiale (DRM) Consortium on the TRAI's Consultation Paper No 07/2023 dated 17th April 2023 on 'Issues related to Low Power Small Range FM Radio Broadcasting'.

### Introduction

With reference to Consultation Paper No. 07/2023 dated 17th April 2023 from the Telecom Regulatory Authority of India (TRAI), inviting comments on the 'Issues related to Low Power Small Range FM Radio Broadcasting', I, Yogendra Pal, Honorary Chairman of the India Chapter of the Digital Radio Mondiale (DRM) Consortium, am pleased to submit the following comments for consideration.

The proposed commercial use of a low power small range terrestrial FM broadcasting system for Residential Complexes, Industrial Exhibitions and small businesses, Sports commentary, Public address and Event Information systems, Music concerts, cultural events, religious organizations, Political Rallies, Hospital Radio services, etc, is a very worthy initiative. This would not only reduce noise pollution drastically but also will enable us to receive information very comfortably.

We are sure that the demand for the use of low-power small-range FM transmission systems will come up for many other commercial applications. So, the policy should not only meet the current demands of all types of users but should also be able to meet new future demands and thus become future-proof in terms of infrastructure, regulations, and features.

### Suggestion of DRM Digital Radio

For optimal future radio services, we suggest adopting DRM Digital Radio for low-power and small-range broadcasting in the FM band.

A low-power small-range broadcast can benefit from the myriad of services and broadcasting features made possible by DRM digital radio:

- DRM digital radio is the most modern, non-proprietary, open digital radio standard. It is recognized and endorsed by relevant organisations namely ITU and ETSI and is currently in use in India.
- DRM digital radio goes beyond just audio transmission. Not only does DRM provide high-quality audio, but it also offers a range of additional services such as Journaline, a text and Unicode-based service that presents content in several Indian languages, in a structured format. DRM also supports the transmission of multimedia content like images, graphics, and slideshows, as well as interactive applications that allow listeners to actively participate and engage with the radio broadcast.
- DRM digital radio is scalable both in terms of service offering and spectrum usage. It offers up to 4 services (3 audio, 1 data) on a single transmission frequency (one DRM block) and allows for multiple DRM blocks side-by-side. This scalability makes DRM digital radio a highly spectrum-optimal and energy-efficient system.
- DRM digital radio delivers improved coverage with minimal interference. DRM digital radio utilizes digital modulation and sophisticated error correction techniques and incorporates efficient audio coding with xHE-AAC. These mechanisms ensure robust and reliable reception.

- DRM digital radio in India has seen the fastest market penetration for digital radio technology with over 60 lakh cars with line-fit DRM radio as of mid 2023. DRM has embraced xHE-AAC as its audio codec while xHE-AAC is natively supported on Android and iOS and available on modern mobile phones as a default.
- DRM digital radio includes Emergency Warning Functionality (EWF) to provide timely and much more effective dissemination of emergency alerts and warnings to the public which can't be missed by radio listeners irrespective of whether their radio devices are in standby mode and/or tuned to any other frequency. DRM's EWF is capable of multilingual audio alerts complemented by Journaline text-based service providing detailed information.

DRM Digital Radio is on-air broadcasting delivering one-to-many services and serving equally well an unlimited number of listeners in the given coverage area. Therefore, DRM broadcast does not suffer from point-to-point connection technologies such as Wi-Fi, Bluetooth, or even mobile phone networks, that easily over-saturate in crowded hotspot places such as stadiums, gathering places, or events.

The following justifications are furnished in support of DRM Digital Radio over analogue FM:

- State-of-the-Art future-proof technology** - Analogue FM gives reasonably good quality audio service, but it is a 20<sup>th</sup>-century technology with limited innovation scope. It is both spectrum and power-hungry offering only a single audio service per frequency. Digital broadcasting in the FM band provides multiple services, within the same allocated frequency band, at much-reduced power along with a host of other value-added services. Due to the inherent advantages of digital transmission, broadcasters the world over are adopting high-quality digital delivery systems. Mandatory digitisation of cable TV networks in India is an example. All India Radio is already broadcasting in DRM digital in MW & SW bands in a big way. TRAI has already recommended that private broadcasters in India must also be allowed to go digital for terrestrial broadcasting in the FM band. It is thus inevitable that digital radio broadcasting, also in the FM band, will be a reality in India soon.
- Half the frequency spectrum required** – One audio channel in analogue FM requires a 200 kHz frequency spectrum, whereas one block of DRM digital (which enables the broadcast of up to 3 audio programmes and additional multimedia services like Journaline) requires only 100 kHz, i.e., half the spectrum that is required for an analogue FM transmission.
- Multiple single audio channels and value-added services** – In analogue FM only one audio programme can be broadcast in the allocated 200 kHz bandwidth, whereas DRM digital enables to broadcast of up to 3 audio programmes (and additional multimedia services like Journaline), within just 100 kHz bandwidth. The availability of 2 additional audio channels is very important to provide commentaries in multiple languages of the sports events, in hospitals, residential societies, and public meetings by the political parties, etc. It is observed that movies are being carried today on TVs in as many as 20 languages simultaneously. Since multiple DRM blocks (up to 8 blocks) can be carried by a single FM transmitter, a person can take permission for multiple adjacent channels to broadcast programmes in more than 3 languages. Whereas in the case of analogue FM, several transmitters will have to be installed by giving larger frequency offsets and the use of additional combiners.
- Seamless incorporation into the national CAP-Integrated Alert System** – In keeping with the plan of the Govt of India to provide emergency warnings on all types of platforms, the National

Disaster Management Authority (NDMA) is considering the possibility of using the AIR DRM transmitter network also for the dissemination of emergency warning signal. Once the AIR DRM transmitter network starts broadcasting the emergency signals, all types of DRM receivers in use for the under consideration low power small range FM broadcasts, (irrespective of whether they are ON, in standby mode, or tuned to any frequency) will also be able to receive emergency warning signals automatically. As this feature isn't available in analogue FM receivers, reception of emergency warning signals will be a very important added reason to permit deployment of low power small range FM broadcast in DRM digital mode only.

- v. **No additional spectrum required and efficient use of white spaces** – Large white space exists between the already operational large power FM transmitters; it can't be used for transmission in analogue FM but can be very well utilised for transmissions in digital DRM. For a DRM Digital operation, frequencies can be allocated to at least 3 users in one white space of 600 kHz between two analogue FM transmitters. Thus, many low-power small-range channels are possible in DRM digital in all these white spaces and there may be no need to reserve any other frequencies in the FM band for low-power small-range broadcasting in DRM digital.
- vi. **Much Lower frequency offset required** – Centre-to-centre spacing of 800 kHz is required between the two analogue FM transmitters (i.e., 600 kHz frequency gap) but a DRM digital transmitter can be installed at a spacing of only a 50 kHz frequency gap from an analogue FM transmission and/or another digital transmitter. Thus, DRM digital permits the operation of much more FM-band radio services, which in any case would be required particularly in major cities where the available spectrum is limited.
- vii. **Better cut-off of in DRM Digital receivers** – Analogue FM receivers are required to receive signals within the selected 200 kHz bandwidth only; but it has been observed that FM receivers that don't use digital tuners, don't have a sharp cut-off of 200 kHz. As a result, these receivers get interference from the adjacent analogue FM stations. DRM digital receivers have a much better cut-off response.
- viii. **Innovation** – While analogue FM offers little in terms of innovation and servicing all types of audiences, DRM digital radio is the newest, most complete, and internationally recognised standard for digital broadcasting in all frequency bands (MW, SW & VHF). Citing the use cases of limited area broadcasting stated in the consultation paper (e.g., drive-in theatres, hospital radio, amusement parks, etc.), an innovative single DRM receiver with built-in local Wi-Fi hotspot is enough to make the DRM services available to listeners nearby on existing mobile phones. Additionally, DRM digital radio offers 3 audio services and additional data services such as Journaline, SlideShow, etc, which fits such use cases where each audio service can be of a different language while complementing the audio with text and graphics (subtitles, hospital info, ads, etc.) on Journaline. Yet another innovative prospect of DRM digital radio is public signage. A limited broadcast can make use of such public signage.
- ix. **Timing is right** – It is the perfect time to introduce low-power FM by using the benefits of the DRM standard. This will be fully in line with the TRAI's recommendation to introduce Digital in FM band to digitise and to introduce the advantages of Digital Radio over analogue to both broadcasters and the audience. With innovative solutions such as a single DRM receiver

servicing a large local audience on existing phones, and public signage using the DRM FM transmission, users will be quickly introduced to DRM digital radio giving a boost to the receiver market and Indian industry.

## Comments on the issues raised in the Consultation Paper by TRAI

**Q1. Should the use of low-power small-range FM Radio broadcasting by various entities be licensed or unlicensed? Please provide your comments with detailed justification.**

**Comments:**

Even the low power small range FM Radio broadcasting must be licensed given the following:

- a) It has been observed that, at times, social media, which doesn't require any license, is used for anti-social activities. Thus, Internet services are required to be blocked in specific areas. Terrestrial broadcasting can also be easily misused by the anti-social elements and by the time it is detected it could have caused great damage to the nation.
- b) In the case of FM broadcasting, even in DRM digital, it is mandatory that for interference-free service the frequency of operation meets a specific criterion of frequency spacing between the nearby transmitters. This is applicable even for low power small range services in analogue FM or even in DRM digital, though with DRM it is possible to have much more stations since it requires much less channel-to-channel frequency spacing.
- c) Considering the commercial use cases such as drive-in theatre, amusement parks and content that are broadcast a license may be required for broadcasting even on limited coverage.

**Q2. In case the use of low power small range FM Radio is licensed, whether there is a need for the introduction of a new category of service provider for using low power small range FM Radio broadcasting? Please provide your comments with detailed justification.**

**Comments:**

Yes, a new category "Ultra-Local Radio" may be introduced. This shall be an additional service provider to the list which includes Public Service, Commercial, Community, Ham, etc. A separate category is needed and shall be defined based on transmission power, coverage, and use case. This way a separate spectrum licensing model can be defined for such a category of service provider.

**Q3. Should the low power Radio equipment continue to be subjected to type approval by WPC?**

**a. If yes, do the current technical specifications / approval process require any amendment/ modification/ simplification?**

**b. If not, please suggest as to how to ensure quality standards for the equipment and users of low power FM services.**

**Comments:**

WPC approval must be mandatory even for low-power DRM transmitting equipment. It is requested to consider the task of creating the technical specifications of the transmission and approval process as part of the DRM FM rollout. A universal DRM receiver specification is sufficient to cater to all kinds of use cases including the low power DRM FM transmission.

**Q4. In case, stakeholders consider that a license is necessary for low power small range FM broadcasting, what should be the:**

**a. Eligibility criteria**

**Comments:**

Any person may seek a license for the low power small range FM broadcast who is:

- i) an individual who is more than 18 years of age and is a citizen of India.
- ii) as an association of individuals or body of individuals, whether incorporated or not, whose members are citizens of India.
- iii) a company as defined in the Companies Act 1956

**b. Period of License**

**Comments:**

The license may be granted for use up to i) 30 days ii) 90 days and iii) 1 year, including the testing period. It should be possible to get an extension of the license to the above periods. Applications for extension must also be obtained online as suggested under Policy /Methodology for allocation of spectrum below in section f.

**c. Entry Fee**

**d. License Fee**

**Comments:**

Entry and License fees must be kept low so that users are motivated to use low-power FM broadcast for small-range services.

**e. Area of operation**

**Comments:**

As outlined above, the license must be issued location-wise.

**f. Policy/ Methodology for allocation of Spectrum**

**Comments:**

The licensing process must be very simple and online. All applications must be obtained online, and the license must be allocated in a timebound manner. The status of the application must be available online to the applicant. The grievance redressal procedure must also be outlined and simple.

**g. Prescribed Technical parameters if any.**

**h. Any additional terms and conditions governing such license.**

**Q5. Whether frequencies in the existing FM band can be dedicated for low power FM Radio broadcasting? Please provide details with justification.**

**Comments:**

Large white space exists between the already operational large power FM transmitters; it can't be used for transmission in analogue FM but can be very well utilized for transmissions in digital DRM. For a DRM Digital operation, frequencies can be allocated to at least 3 users in one white space of 600 kHz between two analogue FM transmitters. Thus, many low-power small-range channels are possible in DRM digital in all these white spaces and there may be no need to reserve any other frequencies in the FM band for low-power small-range broadcasting in DRM digital.

**Q 6. What should be the licensed area of frequency assignment- locationwise (Stadium, Auditorium, Malls, Residential complex etc.) or citywise. Please provide details with justification.**

**Comments:**

The license must be issued location-wise so that frequencies can be allocated while keeping the frequency spacing requirements in view and ensuring interference-free services.

**Q 7. What should be the maximum power of a low power small range FM transmitter? Please provide your inputs with detailed justification.**

**Comments:**

Reception in the FM band is based on the line of sight. FM signal, analogue or digital, can reach exceptionally long distances if there are no intervening buildings or other obstructions. DRM digital signal can reach even much larger distances than the analogue signal. As such, in the use cases under consideration, the ERP of the DRM signal of the order of a few mW to 10W should be sufficient depending on the coverage required in open space or closed buildings. It may be further added that in the case of DRM, the use of even much higher DRM power can be permitted, for better reception, as these signals will neither interfere with the analogue FM stations nor with the adjacent DRM signals allocated at 50 kHz spacing.

**Q 8. Stakeholders may also provide their comments on any other issue relevant to the present consultation.**

**Comments:**

- i. To avoid misuse of the transmitting equipment, it should not be possible to operate the transmitter till a license is granted by the licensing authority (except for a small duration of about 10 minutes for testing). For this purpose, the transmitting equipment needs to have an attached lock/device which should be enabled remotely by the licensing authority with the grant of the license.
- ii. Some of mobile manufacturers have stopped incorporating the FM Radio reception facility in their phones. In this connection, IT Ministry has recently issued an advisory to mobile phone manufacturers to continue to provide this feature in their models. It is suggested that after the policy is announced for the use of DRM in FM band by Prasar Bharati, Private Broadcasters and Community Radio Stations (CRS), Govt of India may make it mandatory for all mobile phone manufacturers to provide DRM FM reception facility, including EWF, in all mobile phones and all entertainment systems installed in cars.
- iii. Please find further information in the Annex
  - a. Annex A – Provides a detailed status of DRM digital radio deployment in India.
  - b. Annex B – Provides additional considerations supporting our suggestions.

Submitted for kind consideration, please.

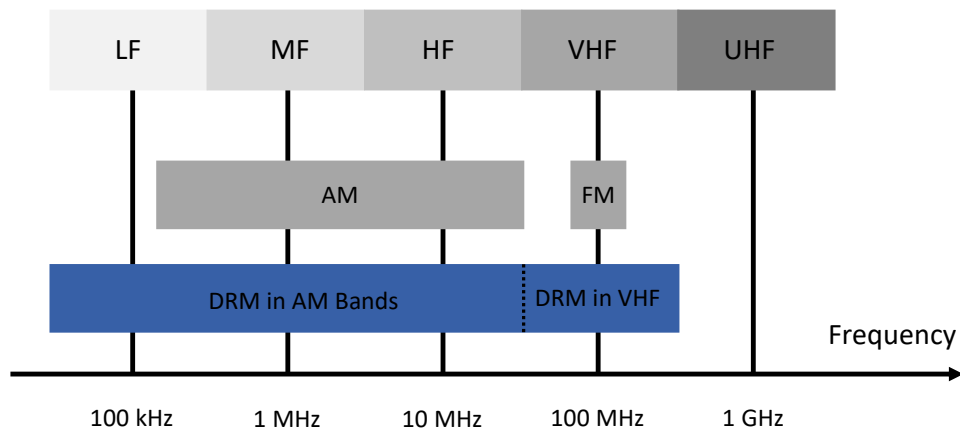


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## Annex A – DRM in India

### About DRM

**Digital Radio Mondiale (DRM)** is the technologically most advanced global digital radio standard. It is internationally standardized by ITU<sup>1</sup> and ETSI<sup>2</sup> for digitising terrestrial radio broadcast in all frequency bands, i.e., the natural digital successor technology for the former analogue radio standards AM and FM.



**Figure 1: DRM is the only digital radio standard for all bands**

As shown in **Figure 1** above, DRM supports all the radio broadcast bands: AM bands (LW, MW, SW), as well as VHF bands I, II (FM band), and III, thereby offering a single solution for all coverage needs of a country – from local and community services to regional and national coverage, up to international services. Irrespective of the broadcast bands, DRM is a single common standard offering an identical feature set for a consistent listener experience.

### DRM Digital Radio in India

India has adopted DRM as the only digital radio broadcast standard with one of the world’s largest digital radio deployments in the form of the nationwide digitization of MW and SW bands in the first phase.

#### Status DRM transmission in India:

- India has 35 high-power DRM MW and 2 SW transmitters operating in DRM.
- 8 additional DRM transmitters are due for launch by Prasar Bharati (6 in MW and 2 in SW).
- Current DRM transmissions can reach 900 million people (in pure digital mode), giving them access to rich DRM digital radio content from All India Radio (AIR).
- AIR is fully supportive. They have invested in exclusive and advanced radio features specifically for DRM listeners, such as exclusive radio broadcast audio programmes (news 24/7, Cricket,

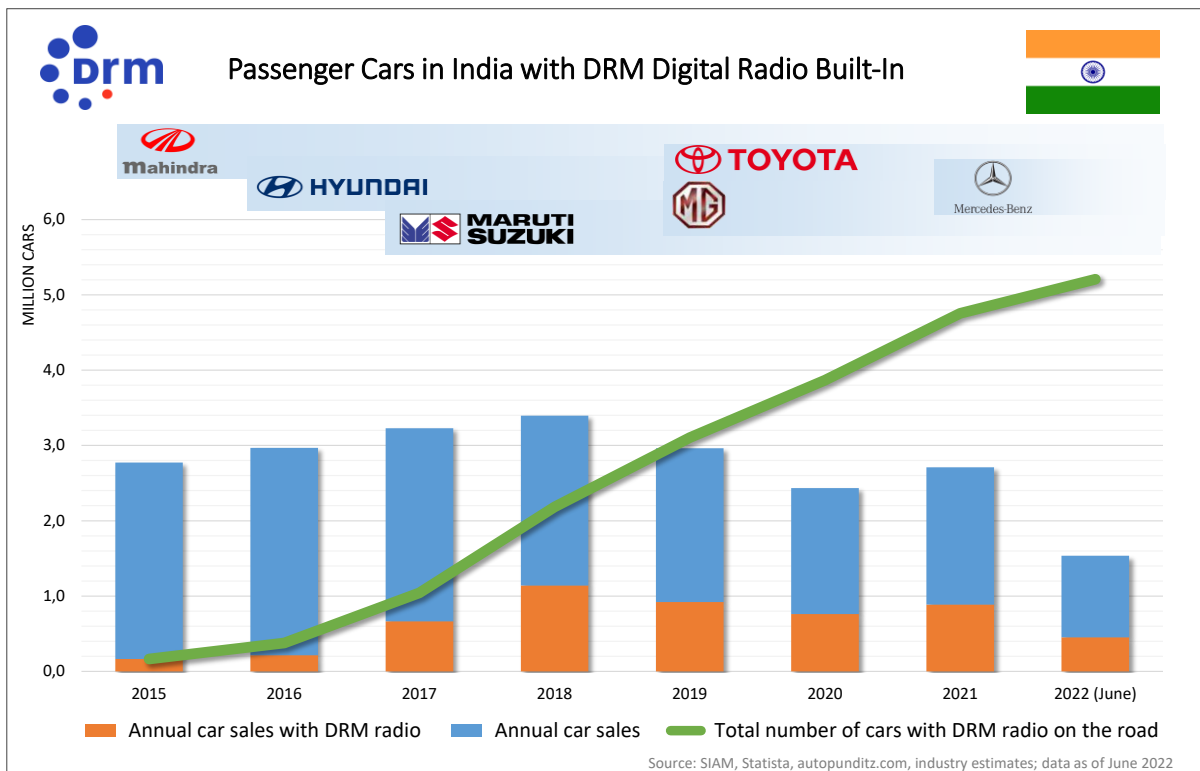
<sup>1</sup> ITU-R BS.1514-2, System for digital sound broadcasting in the broadcasting bands below 30 MHz ([https://www.itu.int/dms\\_pubrec/itu-r/rec/bs/R-REC-BS.1514-2-201103-1!!PDF-E.pdf](https://www.itu.int/dms_pubrec/itu-r/rec/bs/R-REC-BS.1514-2-201103-1!!PDF-E.pdf)) and ITU-R BS.1114-9, Systems for terrestrial digital sound broadcasting to vehicular, portable and fixed receivers in the frequency range 30-3000 MHz ([https://www.itu.int/dms\\_pubrec/itu-r/rec/bs/R-REC-BS.1114-9-201506-1!!PDF-E.pdf](https://www.itu.int/dms_pubrec/itu-r/rec/bs/R-REC-BS.1114-9-201506-1!!PDF-E.pdf))

<sup>2</sup> [http://www.etsi.org/deliver/etsi\\_es/201900\\_20199/201980/](http://www.etsi.org/deliver/etsi_es/201900_20199/201980/)

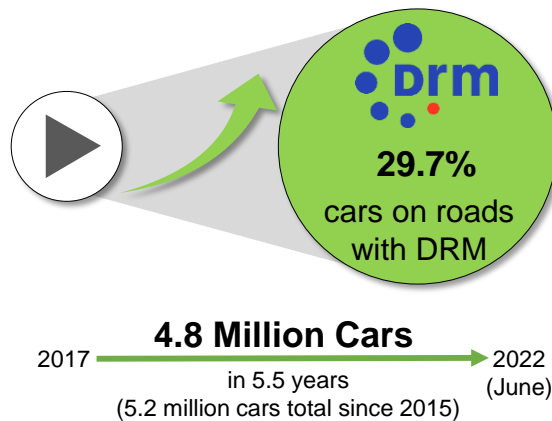
etc.), Multi-lingual, interactive Journaline text information, upgrade to the latest DRM encoder infrastructure (DRM ContentServers) readily established in key metros.

**Status of DRM Receivers in India:**

**Automotive** – The Indian automotive industry has achieved the fastest digital radio adoption of any national digital radio deployment around the world, with around 30% of new cars on the road currently being equipped with a DRM digital radio receiver, totalling over 60 lakh passenger cars as of mid 2023. Automotive DRM receivers are part of the default radio setup in new cars without any extra cost to the consumer.



**Figure 2: Passenger cars in India with DRM Digital Radio built-in**



**Figure 3: Fastest digital radio adoption of any national digital radio deployment**





**Mobile Phones** – The current built-in FM antenna or earphone jack antenna can receive DRM FM signals in mobile phones. In addition, support for DRM FM-band reception on phones does NOT require dedicated or special hardware or chips, as existing FM front ends may be configured to capture the DRM on-air signal. This is enabled by DRM’s overall transmission bandwidth of just 100 kHz. The digital processing and decoding of the DRM services can then be carried out in software, using the “STARWAVES DRM SoftRadio”<sup>3</sup> app which is available on Android app stores (Google, Amazon, Huawei). The announcement by the Indian Government to adopt the DRM in FM band by the Private Broadcasters and for low power small range purposes will motivate mobile manufacturers to invoke this feature by default on their future mobile phone models.

In addition, even existing mobile phones can easily be upgraded to full DRM reception capability, simply by connecting an existing off-the-shelf (analogue) RF tuner dongle via USB. These dongles are available at very low-price points, and the required DRM receiver app can be downloaded from the Android app stores listed above. For the future, DRM FM-band reception can be integrated into new mobile phones without extra hardware cost as a default feature alongside analogue-FM reception (with the xHE-AAC audio codec already included in Android by default today).

**Desktop/Home radios** – Desktop/Home radios play a marginal yet still important role in today’s radio consumption. Gospel and Starwaves have come out with a variety of models of desktop DRM receivers. As already demonstrated to Prasar Bharati, all these receivers are software upgradable (without any extra cost) to receiver DRM in FM band too. Their cost almost exclusively depends on the production volume. As the previous adoption of analogue FM receivers has proven, we can expect very low desktop radio prices particularly once private FM broadcasters and Prasar Bharati starts broadcasting DRM services in FM band and informing/educating their listeners on the new radio capabilities. Deployment of DRM for low power small range FM broadcasts will further help in increasing the demand and as such further reduction in the price of desktop DRM receivers. CML Microcircuits UK (CML) and Cambridge Consultants (CC) have jointly developed a low cost to produce low-cost DRM receivers. This low-cost all-band DRM chip is expected to be in mass production soon. Ready-to-deploy and full-featured DRM tuner and receiver modules are available also from manufacturers such as Starwaves.

#### **Status of Make in India:**

DRM is a global non-proprietary, open standard and can be implemented by anyone. Manufacturers do not request licenses (i.e., ask any single entity for permission – which could then be rejected), resulting in free & full access to technology including Indian companies.

Based on the early adoption of DRM as the only digital radio standard in India, the country and its industry today are the hub of DRM chipsets and SDR solutions. In fact, DRM receiver chipsets, developed and made in India, are being exported for the world market and specifically also drive Chinese DRM receiver models. A true success story for cutting-edge technology “Make in India” for the world market.

- NXP’s world-leading DRM chipset is developed and designed in India, with all the worldwide technology know-how centred in Bengaluru.
- Inntot Technologies ([www.inntot.com](http://www.inntot.com)), a start-up enterprise in India, which has already won several awards/recognitions, has developed a software-based DRM receiver, which is based on a generic processor. Over 5 lakh cars by two car manufacturers in India are already deploying DRM receivers developed based on Inntot design.

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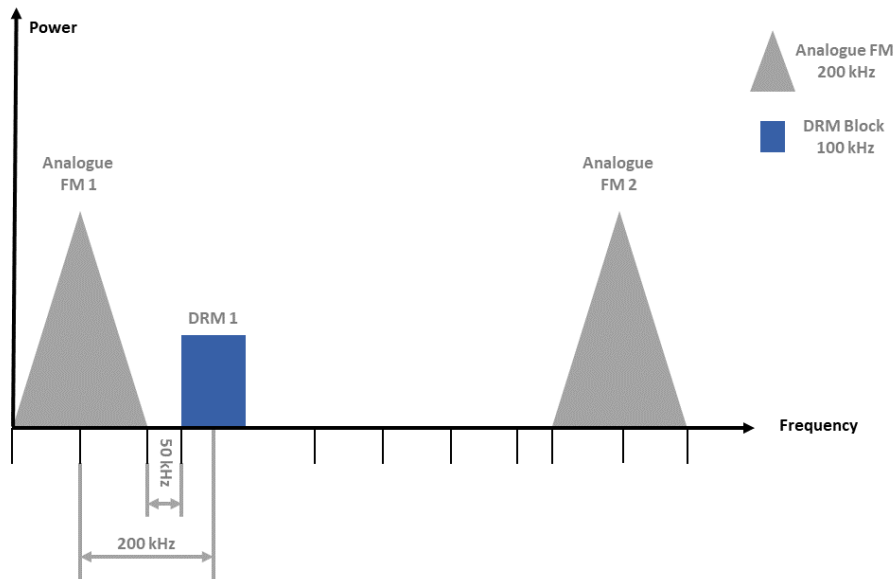
<sup>3</sup> STARWAVES DRM SoftRadio:

<https://play.google.com/store/apps/details?id=com.starwaves.drmssoftradio.drm&hl=en&gl=US>  
[https://www.amazon.de/STARWAVES-GmbH-DRM-SoftRadio/dp/B08X3T8TGV/?language=en\\_GB](https://www.amazon.de/STARWAVES-GmbH-DRM-SoftRadio/dp/B08X3T8TGV/?language=en_GB)

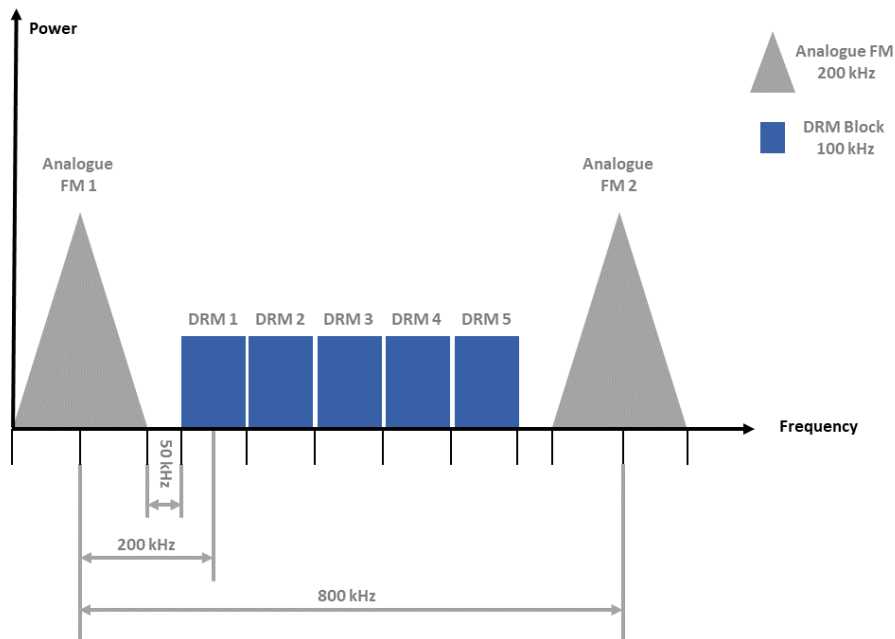
## Annex B- Additional considerations

Here are some additional considerations for adopting DRM digital radio for low-power small-range broadcasts in the FM band.

- i. **DRM is highly flexible** and is designed to be the perfect digital radio solution to complement the existing analogue FM spectrum & infrastructure scenarios. It also is future-proof in terms of features and a country's digitization process & regulations.
- ii. **DRM Digital FM offers a win-win situation to all stakeholders.** By going digital, the users of the technology can offer more content choices, complemented with multimedia content, to their listeners at much-reduced power consumption, thereby increasing the opportunity for revenue generation and meeting the aspirations of many of their audiences. Governments immensely benefitted as digital technology is green technology, in getting extra income from the increased revenue generated by the broadcasters and in using radio networks for providing Emergency Warning alert signals. Listeners get excellent quality sound in stereo along with pictures and text in multiple languages.
- iii. **Utilisation of white space** – For interference-free reception, it is mandatory to give a frequency space of 600 kHz between two analogue FM stations. Even a low power small range FM transmitter if installed in the 600 kHz gap between two high-power transmitters, will certainly get interference from the adjacent high-power analogue FM transmitters. However, DRM digital transmitters can be installed by giving a gap of only 50 kHz and can even be installed in the FM band whitespaces. **Figure 4** represents a typical scenario where a side-by-side combination of multiple DRM blocks fills the gap between the analogue FM transmissions. All these DRM blocks are jointly amplified by a single FM-band transmitter for maximum efficiency and cost-saving. Each DRM block – the transmission signal created from one independent MDI input – represents a single broadcaster or user with full ownership of the transmission content and configuration. Each of these DRM blocks offers up to 3 audio programs and additional multimedia services like Journaline. As shown in **Figure 5** up to 5 DRM blocks can be provided in the white space of 600 kHz between two high-power analogue FM transmitters. This allows the use of spectrum, which is currently technically not usable by analogue FM transmissions.



**Figure 4: Insertion of DRM block from a separate transmitter in the white space between existing FM transmissions, showcasing an exemplary frequency gap of 50 kHz**



**Figure 5: Insertion of 5 side-by-side DRM blocks (representing for example 5 independent broadcasters) from a single transmitter in the white space between two existing FM transmissions**

- iv. **Support to the Hearing-impaired persons** – Broadcasters have a social responsibility to serve the hearing-impaired users too. TV network in India has been able to meet this social obligation very well by providing several programs and sub-titling for hearing-impaired users, but unfortunately, analogue radio hasn't been able to fulfil this social responsibility very effectively as there is no possibility to provide information in text and/or in the video in analogue mode. In DRM this requirement is met by its text application Journaline, which provides not only

multi-lingual text information and thus makes the rich content created on the broadcaster's website available to the listener community directly on the radio set; it is also the official ITU-endorsed solution for sub-titling DRM digital radio services for hearing impaired audiences.

- v. **DRM Emergency Warning Functionality** – Analogue FM transmitters are generally utilised to carry the emergency warnings signals too but this is possible only by substituting the normal broadcast with emergency programmes. Also, only the FM receivers who happen to be currently switched on and are tuned to the specific frequency can get the emergency signals. DRM offers EWF (Emergency Warning Functionality) as a native core feature. The EWF alarm signal allows authorities to demand the switch-over by DRM receivers in the affected area to the emergency programme (typically provided by a public broadcaster), and to automatically switch on a DRM receiver in standby mode. A user who is outside the disturbed area can continue to enjoy the normal programme in DRM digital. Secondly, the EWF emergency programme comprises both audio and text/visual information via Journaline, with the text component enhancing the audio component, providing detailed information for on-demand look-up on the radio set (without the need for the Internet), and all this in multiple languages simultaneously. Thereby, Journaline ensures the inclusion of hearing-impaired users as well as non-native speakers as part of the emergency programme content.

All India Radio has already deployed DRM in MW and SW bands in a big way over the past years, serving up to 900 million Indians all over the country, when transmitting in full DRM power. It is learnt that keeping in view the plan of the Govt of India to provide emergency warnings on all types of platforms, the National Disaster Management Authority (NDMA) is considering the possibility of using AIR DRM transmitters network also for dissemination of emergency warning signals. Once the AIR DRM transmitter network starts broadcasting the emergency signals, all types of DRM receivers in use including the ones for low-power small-range FM broadcasts, irrespective of whether they are ON, are in standby mode, or tuned to any frequency) will also be able to receive emergency warning signals automatically. As this feature isn't available in analogue FM receivers, reception of emergency warning signals will be a very important added reason to permit deployment of low power small range FM broadcast in DRM digital mode only.