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## **Comments on the TRAI's Consultation Paper 7/2023 on "Issues Related to Low Power Small Range FM Radio Broadcasting"**

### **Submitted by Xperi Corporation HD Radio™ Technology Group**

Xperi Inc supports TRAI on the Consultation Paper 7/2023 inquiring on Issues Related to Low Power Small Range FM Radio Broadcasting. Xperi is supportive of radio broadcasters and radio technology world-wide. Our HD Radio technology offers many advantages for spectrum efficiency, new content services, government broadcasts, multicasting of multiple audio programs on the same transmission frequency, and reliable emergency warning systems.

#### **General Statement about Digitization of FM**

Digital radio broadcasting is transforming radio operations across the world. Many digital technologies are providing new services and content to consumers. Analog radio is losing ground to these digital services and losing audience share in many markets. In order to compete, radio stations in countries around the world are converting to digital radio broadcasting systems. We are supportive of the plans for allowing broadcasters to implement analog as well as digital broadcasts on their new frequency assignments. TRAI's suggestions to allow stations to implement a digital radio transition on a voluntary basis permits the continuation of analog broadcasting for the 900+ million mobile receivers and creates the future for digital broadcasting programming to provide new audio channels, data services, and enhanced alerting and warning systems.

We believe that TRAI should recommend a policy that supports the transition of FM operations from analog to hybrid analog-digital broadcast services.

Xperi Inc agrees that digital radio transition for new stations should be implemented in a reasonable time period and without added regulatory burdens. Without clear guidance on the questions raised in the Issues for FM Radio Broadcasting, other emerging technologies will continue to erode the radio-listening audience.

- Digital broadcasting is transforming radio operations across the world.
- Other digital technologies are providing services and content to consumers.
- Analog radio is losing ground to these digital services and losing audience share in many markets. In order to compete, radio stations are converting to digital radio broadcasting systems like HD Radio.

#### **Corporate Headquarters**

2190 Gold Street  
San Jose, CA 95002  
T 1.408.519.9100



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Digital radio implementation should allow for the existing analog services to continue broadcasting with the inclusion of new digital services. It is important to maintain the existing analog broadcasting services.

- Technology should support smooth transition to new digital services while permitting existing analog services. Simulcast of analogue and digital on existing spectrum allocations provide the most efficient approach to retaining existing audience while building new service loyalty.
- Technology should allow for rapid expansion of digital services to provide the listeners with the best access to new information and services.
- Access to additional radio programming has been demonstrated to maintain listenership and increase revenues for radio stations which have adopted digital broadcast services.

We ask that TRAI provide guidance to existing radio stations operating with current licenses which enables smooth transition to digital radio operations while maintaining their existing analog channel assignments.

**Q 1. 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.**

Low power small range FM Radio broadcasting should be licensed in India.

Low power FM (LPFM) in the U.S. is a licensed service. The Federal Communications Commission (FCC) defines LPFM as a non-profit radio station with authorization to broadcast at an effective radiated power (ERP) of 100 watts or less with a maximum of 100 watts at 30m antenna height.

While low power transmitters 250uV/m up to 3 meters distance are allowed, this is defined for unintentional radiators. Since low power FM broadcasting in the FM band (88.1 MHz to 107.9MHz) is an intentional transmission, it does require FCC authorization.

LPFM stations are licensed as a secondary service and are not protected from interference received from other authorized primary FM stations.

This distinction in licensed service classes provides protection for the authorized higher power class transmissions. If an LPFM created interference to a Class A, Class B, or Class C station, the LPFM station would be required to enable remediations to comply with the authorized protection of the higher power services.

This model would benefit India by allowing WPC and other agencies the ability to monitor and regulate spectrum use and protect the primary services from "pirate" stations and interference from secondary services, which could destroy the quality of services in the VHF band.

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**Q 2. In case 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.**

Yes, there is a need for a new category of service provider for using low power small range FM Radio broadcasting.

In U.S. the low power FM transmissions (less than 100 watts ERP) are considered secondary service and are not protected from interference. There may be benefit to introducing new category in order to establish appropriate protection classifications for primary service (high power licensed broadcasting vs. low power broadcasting.)

For the reasons cited above, the secondary classification allows regulatory protection of primary services which would be utilized in the case of emergency communications or governmental controlled programming.

FCC Title 47, Chapter 1, Subchapter C, Part 73, Subpart G defines the rule applicable to LPFM in the U.S. These services are required to meet certain standards to prevent interference to higher power services and to maintain the quality of service of other LPFM stations in the band. The requirements define minimum distance separation to ensure protection and service reliability. These regulations ensure the quality of services for all FM broadcasters, especially primary services, in the VHF band.

**Q 3. 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.**

Low power radio equipment should continue to be subjected to type approval by WPC.

To ensure potential protection requirements to the existing primary services, low power transmission equipment must meet certain RF linearity and spectral emissions requirements to minimize noise and interference in the FM band.

Following the US regulatory policy, low power transmitters are subject to approval by the FCC to ensure spectral purity and accurate power ratings. Overall, oversight by a regulatory body will provide better management of interference and enforcement of protection.

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**Q 5. Whether particular frequencies in the existing FM band can be dedicated for low power FM Radio broadcasting? Please provide details with justification.**

This is a great idea, especially if the service has a separate categorization. Authorizing a specific portion of the FM band would allow the lower power, short range FM broadcaster to have predefined natural interference protection as well as limited impact to existing primary services. If the existing radio receiver market can support the band, the low power short range FM services could be implemented within specific spectral regions.

**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.**

Small range FM broadcasts are ideal for providing localized services and provide the ability to geo-target audio and data. Sample applications include multilingual broadcasts, religious broadcast, educational / campus, stadium, municipal government, and tribal/village services.

The licensed area should be set on a case-by-case basis depending on the application and audience for the service, the transmitted ERP, and the protection required to ensure limited noise and interference to primary services in the VHF band.

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

TRAI should consider not only power levels, but protection requirements for each service application. A higher level of power may be appropriate for cases or applications where there are no interference considerations (co-channel, 200kHz adjacent, or 400kHz adjacent). The primary consideration should protect the primary services that are currently authorized.

TRAI should consider following the recommendations set forth in Recommendation ITU-R BS.412 for field strength reception given the applicant's requested coverage range.

Following the U.S. implementation, 100 watts ERP at 30-meter antenna height may be an appropriate starting point.



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

Small range FM would benefit from authorization that enables digital broadcasting on those stations. Depending on the authorized power levels, digital reception may be possible within small coverage areas. Such digital services could offer new applications for education, geo-targeted messaging and advertising, and other services to the targeted area.

If digital broadcasting is considered for the low power, short range FM services, additional protection requirements may be required to ensure that digital and analog services are not creating mutual interference.

Sincerely,

A handwritten signature in black ink, appearing to read "Ashruf El-Dinary". The signature is fluid and cursive, with a long horizontal stroke at the end.

Ashruf El-Dinary

Senior Vice President, Radio Technology Solutions

[ashruf.el-dinary@xperi.com](mailto:ashruf.el-dinary@xperi.com)

O: +1 443-539-4360

**Corporate Headquarters**  
2190 Gold Street  
San Jose, CA 95002  
T 1.408.519.9100