

**ITU-APT Foundation 3<sup>rd</sup> India Spectrum Management  
Conference**

**Spectrum Planning for Sub-1 GHz  
- a broadcasting perspective**



**Rajeev Kumar**  
**Director (Engineering)**  
**Doordarshan (DDI)**

# About Doordarshan

- Doordarshan is the Public Service TV Broadcaster which was established on 15 September 1959
- Doordarshan is one of India's largest broadcasting organisations in terms of studio and transmitter infrastructure
- Currently, Doordarshan has 36 satellite channels – out of these 3 (DD-National, DD-News and DD-India) are also available in HD.



# About Doordarshan

- DD also has one DTH platform providing 116 TV channels in Free-to-Air mode. In addition it has 48 Radio channels of All India Radio.
- DD services are available through cable, its terrestrial network, DTH platforms, and online platforms.



# Future Roadmap

- Doordarshan has entered into an MoU with IIT, Kanpur to establish a roadmap for:
  - Development of technology roadmap for DTT/D2M architecture
  - Upgradation of existing DTT platform with NextGen technology
  - Establishment of Proof-of-Concept including field trials in various use cases
  - Identification of new revenue streams for the Public Broadcaster to leverage the above

## **Future Roadmap**

### **Benefits to Consumer**

- Will enable end user to access unlimited TV and video content without paying additional charge for data
- Superior quality experience to all users regardless of the number of simultaneous users of the same content
- In addition to conventional TV programs, will get video on demand & educational content.

## Future Roadmap

### Benefits to the broadcasters

- Greater achievement for fulfilling duty of public broadcaster
- Will increase the consumer base as programs can be accessed on variety of devices
- Besides conventional TV programs, will enable value added service, e.g., video on demand, educational content, emergency alerts, disaster management etc.
- Will enhance ability to monetize
- Targeted advertising



## **Future Roadmap**

### **National & Strategic benefits**

- During the Covid-19 pandemic, nation has witnessed the importance of reliable broadcast media (vs unreliable social media)
- Ability to broadcast directly to millions of citizens on their devices TV/Mobile phones/laptops/PCs
- Emergency alerts directly , reliably and without depending on Internet
- A terrestrial fall back will be available for broadcasting content of strategic/national importance in case of catastrophic failure of satellite and internet

## Future Roadmap

### IIT-K White Paper – Key findings

- Hybrid transmission spectrum - combination of HP/HT and LP/LT
- will have improved outdoor and indoor coverage
- 526-582 MHz should be reserved for Direct to Mobile broadcasting
- NGB platform will include Doordarshan/Akashwani and private broadcaster services
- Allocation from USOF for the roll-out of this platform as this will be primarily be public service broadcasting
- Mandatory provision of reception on compatible devices TVs/smart phones and other devices
- Mandatory carriage on traditional Cable/DTH networks.



## Spectrum below 1 GHz in WRC-23

### Agenda Item 1.5

*to review the spectrum use and spectrum needs of existing services in the frequency band 470-960 MHz in Region 1 and consider possible regulatory actions in the frequency band 470-694 MHz in Region 1 on the basis of the review in accordance with Resolution **235 (WRC-15)**;*

## **Agenda Item 1.5**

Co-existence studies conducted between following services:

- IMT BS&UE and DTTB,
- DTTB and PPDR,
- DTTB and non-IMT trunked ad hoc mobile systems,
- wind profiler radar and LMS,
- RAS and LMS,
- SAB/SAP and IMT

## Agenda Item 1.5

**CPM Report** provides the following Methods to satisfy this agenda item:

**Method A:** No Change (two alternatives).

**Method B:** Primary allocation to the mobile service in the frequency band 470-694 MHz with or without identification to IMT in the frequency band 470-694 MHz or parts thereof in Region 1 (three alternatives).

**Method C:** Primary allocation to the mobile, except aeronautical mobile, service in the frequency band 470-694 MHz and identification to IMT in the frequency band 470-694 MHz or parts thereof in Region 1 (nine alternatives).

### Agenda Item 1.5

**Method D:** Primary allocation to the mobile, except aeronautical mobile, service within the band 470-694 MHz without IMT identification (five alternatives).

**Method E:** Primary allocation to the mobile, except aeronautical mobile, service of the band 470-694 MHz in Region 1 with technical condition limiting mobile operations to downlink in this band.

**Method F:** Secondary allocation to mobile, except aeronautical mobile, service in the band 470-694 MHz in Region 1 (three alternatives).

**Method G:** In conjunction with Methods B, C, D and E, upgrade of the radio astronomy allocation to primary status.

### Agenda Item 1.5

#### **APT- Discussion and Position**

- one APT Member, part of GE06 agreement in Region 3, is of the view that technical, operational, and regulatory conditions resulted from the ITU-R sharing and compatibility studies shall in no way undermine or reduce protection of and conditions under which this agreement made.
- There was discussion on reflection of views of some APT Members which are of the view that there should be no adverse impact to the existing services in Region 3 and the CPM Method A1 (No Change) is their preferred method.

## Agenda Item 1.5

### APT- Discussion and Position

- some APT Members are considering to support appropriate action at WRC-23, including potential identifications in parts of the frequency band 470-694 MHz to IMT in Region 1.
- Some APT Members are of the view that the Agenda Item 1.5 does not basically address the allocation of the band for mobile service nor IMT identification. Moreover, the studies carried out at TG6/1 have not completed and approved by ITU-R. Therefore, any regulatory action by WRC-23 would contravene the condition stated in Resolution **235 (WRC-15)**.



## **Agenda Item 1.5**

### **APT- Discussion and Position**

#### **India Position at APG23-6**

India is of the view that Agenda Item 1.5 is a Region 1 issue, and any regulatory action decided by WRC-23 with respect to this Agenda Item shall in no way adversely affect frequency allocations and existing and future use of the relevant frequency band in Region 3.

**There was discussion on having PACP for no change position at WRC-23 which was not received consensus.**

**Agenda Item 1.5**

**Regional Positions**

<b>APT</b>	<b>ASMG</b>	<b>ATU</b>	<b>CEPT</b>	<b>CITEL</b>	<b>RCC</b>
<b>None</b>	<b>Method B1</b>	<b>Method A1</b>	<b>Method F1</b>	<b>NOC for Region2</b>	<b>Method A1</b>



Thank You