

**MINISTRY OF INFORMATION AND COMMUNICATIONS**  
**AUTHORITY OF RADIO FREQUENCY MANAGEMENT**

# **Radiocommunications for Bridging Digital Divide in Viet Nam**

**FORUM**  
**RRS-16-Asia Pacific**

September, 2016



# Content

1. Mobile

2. Fixed Wireless

3. Satellite

4. Unlicensed Devices

5. TV White space



# Content

1. Mobile

2. Fixed Wireless

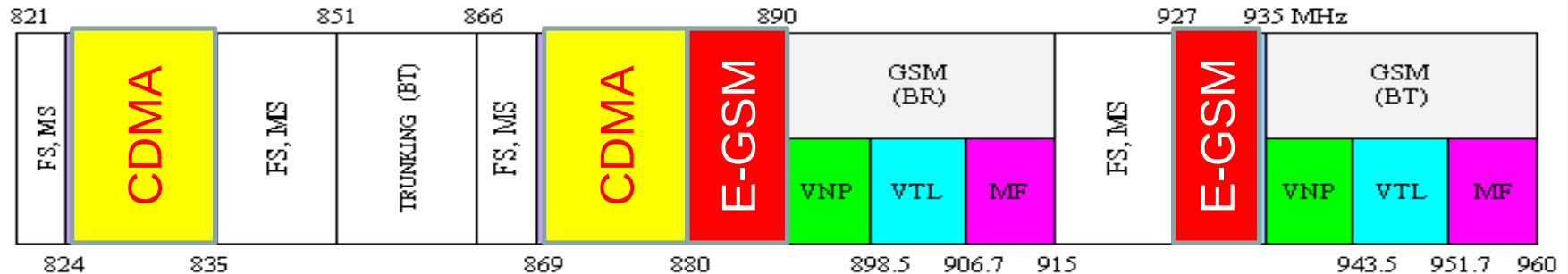
3. Satellite

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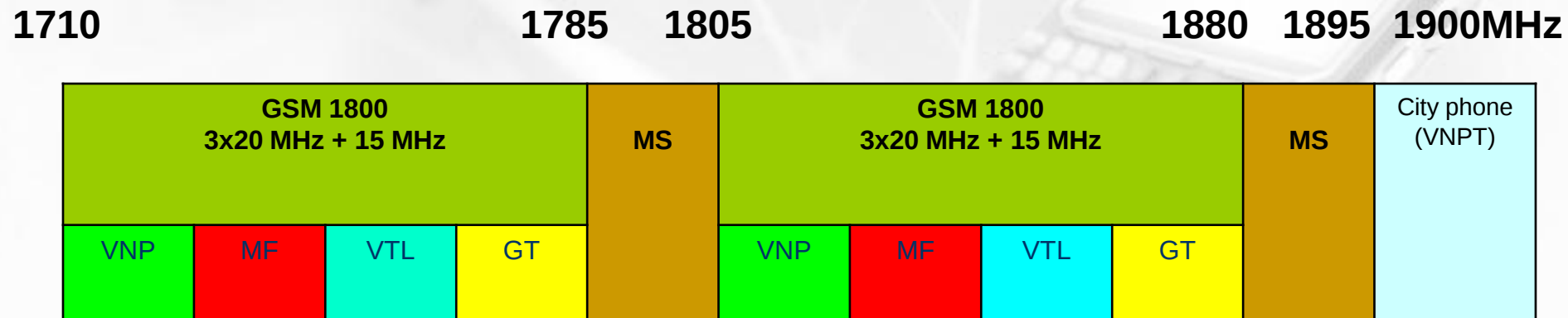
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# Band Plans for 2G in Viet Nam

## 800/900 MHz Band Plan



## 1700/1800 MHz Band Plan

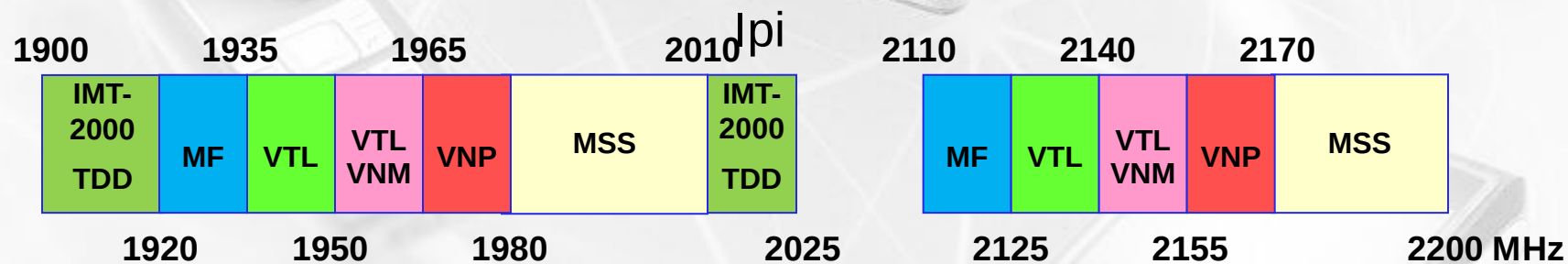




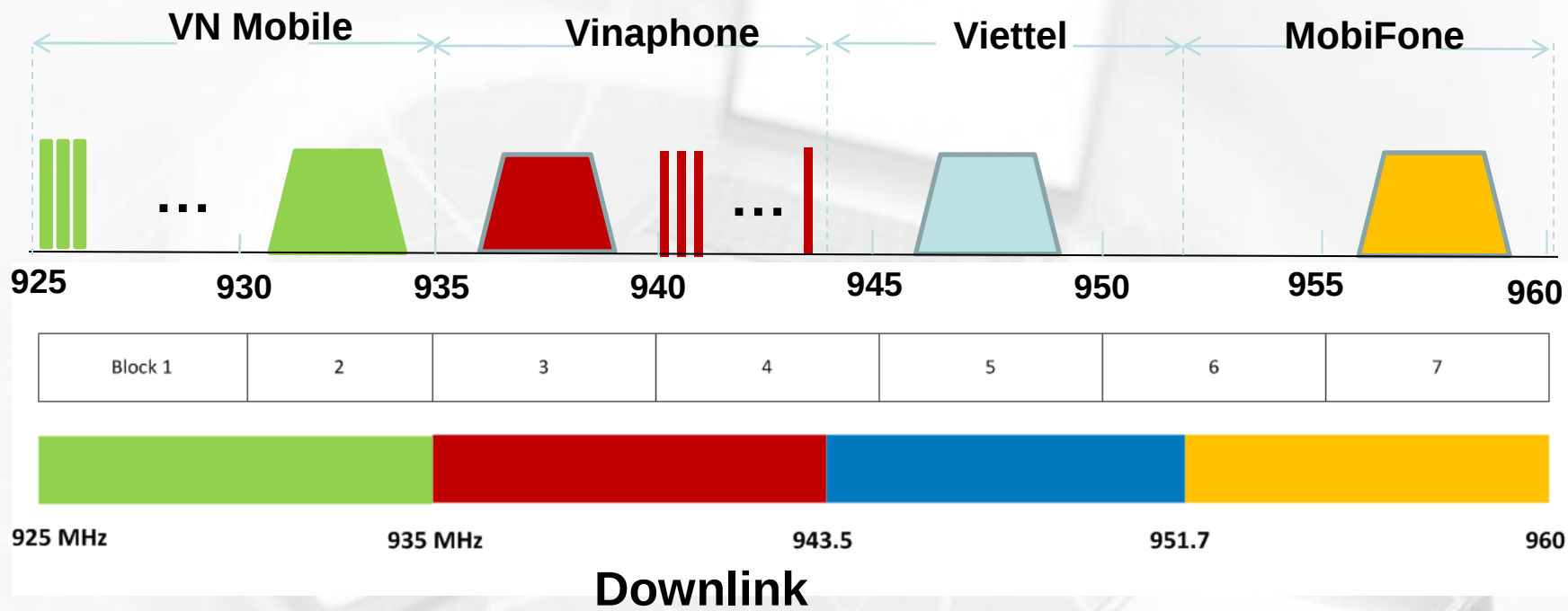
# Band Plan for 3G

## 1900/2100 MHz Band Plan – 3G

4 x 15MHz- FDD



# Re-farming of 900 MHz Band



- ☐ Deploy IMT-2000 in 900 MHz bands
- ☐ The trial licenses to be granted for: Viettel, Mobifone, VNPT(Vinaphone).
- ☐ Deployed thousands of sites
  - VNPT: ~7000 sites
  - Viettel: ~1000 sites
- ☐ 75% handsets support UMTS900

# Re-farming of 1800 MHz Band

- ❑ Trial period: 1 year
- ❑ Max. a number of sites in one area: 100 eNodeBs
- ❑ Trial location: 3 cities
- ❑ Radio interface: LTE/LTE-A (Rel 10 and beyond), Carrier Aggregation(CA)



Say it your way



LTE1800 (20 MHz-GSM) & LTE2600, CA  
Ha Noi, Da Nang, Ba Ria Vung Tau



LTE1800 (20MHz-GSM) & LTE2600,  
CA

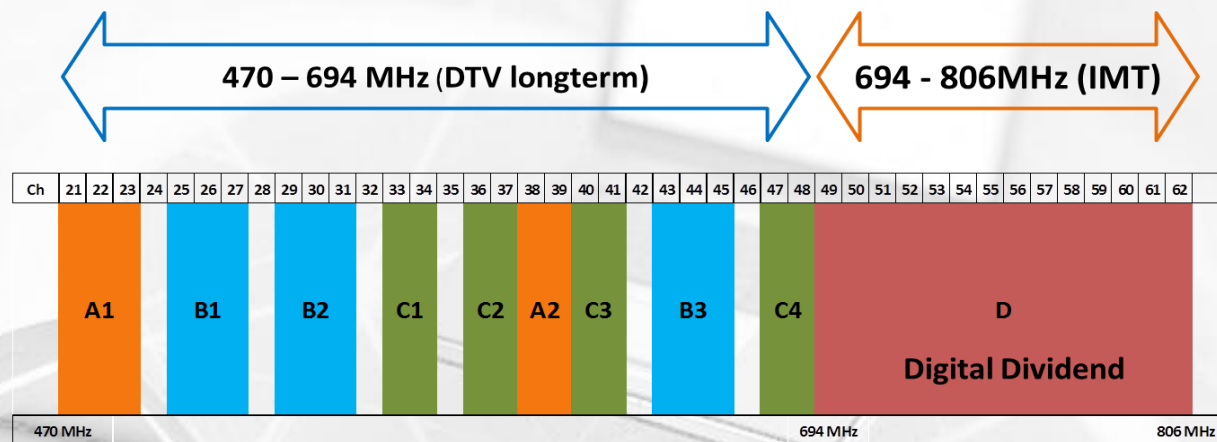
Ho Chi Minh city, Kien Giang



LTE1800 (20MHz-GSM) &  
LTE2600, CA

Ha Noi, Da Nang, Ho Chi Minh city

# Release 700 MHz band for IMT



**A1, A2** blocks are using by analogue TV, future DTV

**C1, C2, C3, C4** blocks are planned for the regional DTV

**B1, B2, B3** blocks are planned for nationwide DTV

**D** block is used during TV digitalization period

Single Frequency network: Delta Area

All TV stations operating in 700 MHz band will be **MOVED** to below 694 MHz or **STOPPED** by 2020

Switching off ATV in 5 central cities

Nov 1<sup>st</sup> 2015

Da Nang fully switch off ATV channels

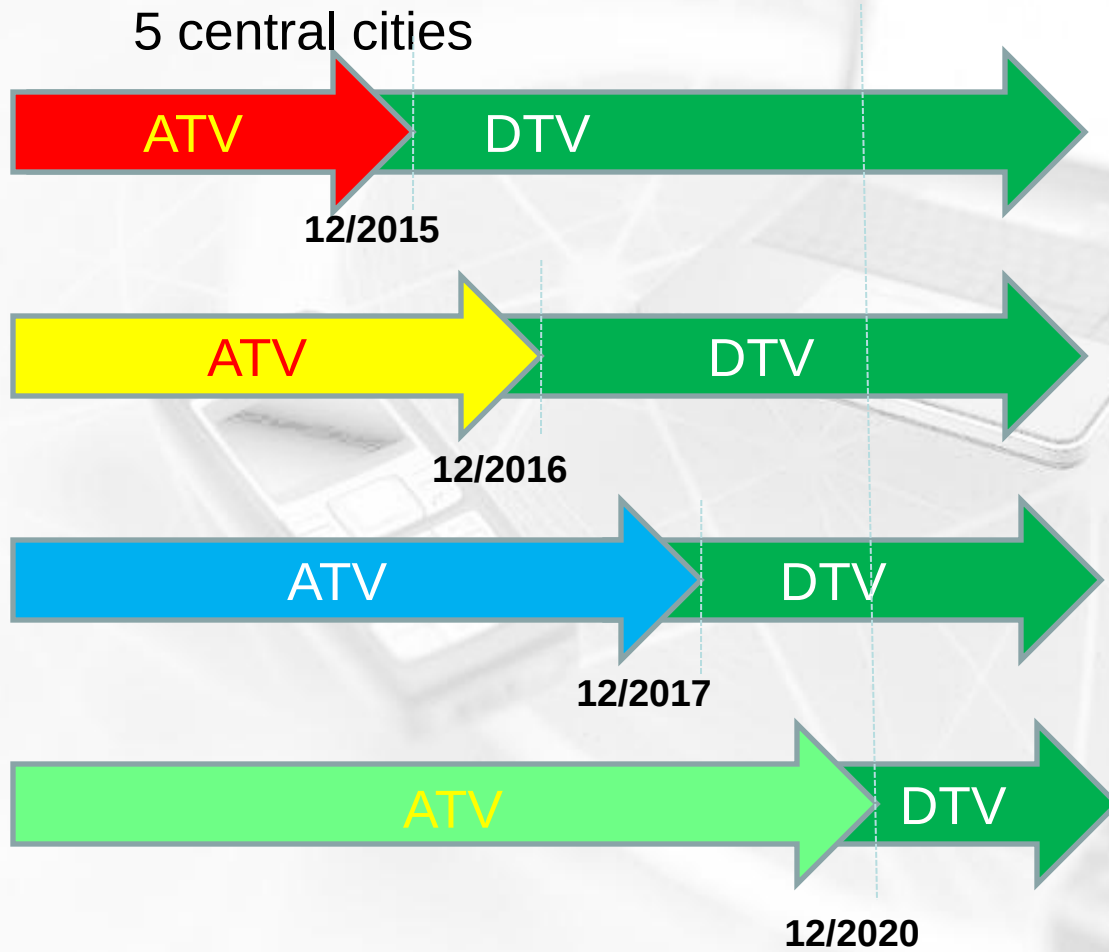
Jun 15<sup>th</sup> 2016

Switching off some ATV channels: Ha Noi, Ho Chi Minh, Can Tho

Aug 15<sup>th</sup> 2016

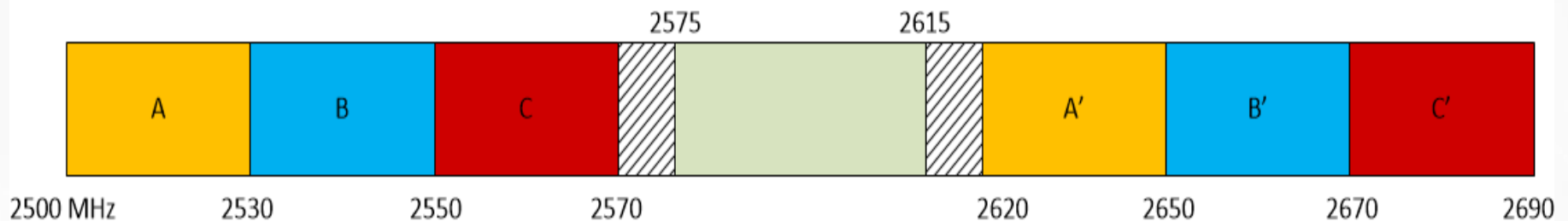
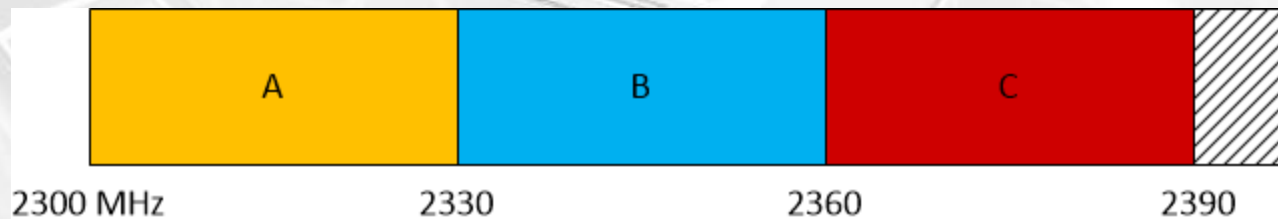
Switching off all ATV channels in 4 remaining central cities

# Analog TV Switch-Off Roadmap



# Band Plan for 4G

- Harmonization with other countries in the region
- Efficient spectrum utilization
- 2.3 GHz, 2.6 GHz:



- Refarming 2G
- Release 700 MHz from TV digitalization



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# Fixed wireless System



- ❑ Basis channel: 50 MHz
- ❑ Permitted bandwidth: 100 MHz (min.) – 2.5 GHz (max.)
- ❑ The type of system: Point – Point microwave, either TDD or FDD



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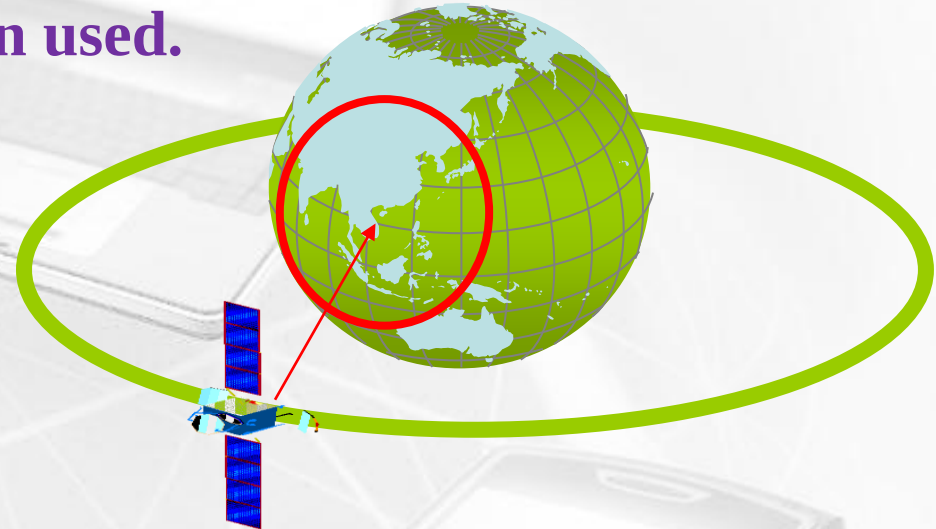
# SATELLITES

VINASAT-1 (132 E)

95% spectrum have been used.

VINASAT-2 (131.8 E)

60% spectrum in use.



## Future project

- Study on new applications for satellite;
- Focus on planned Ku bands and Ka bands;
- Cooperation with other organizations.



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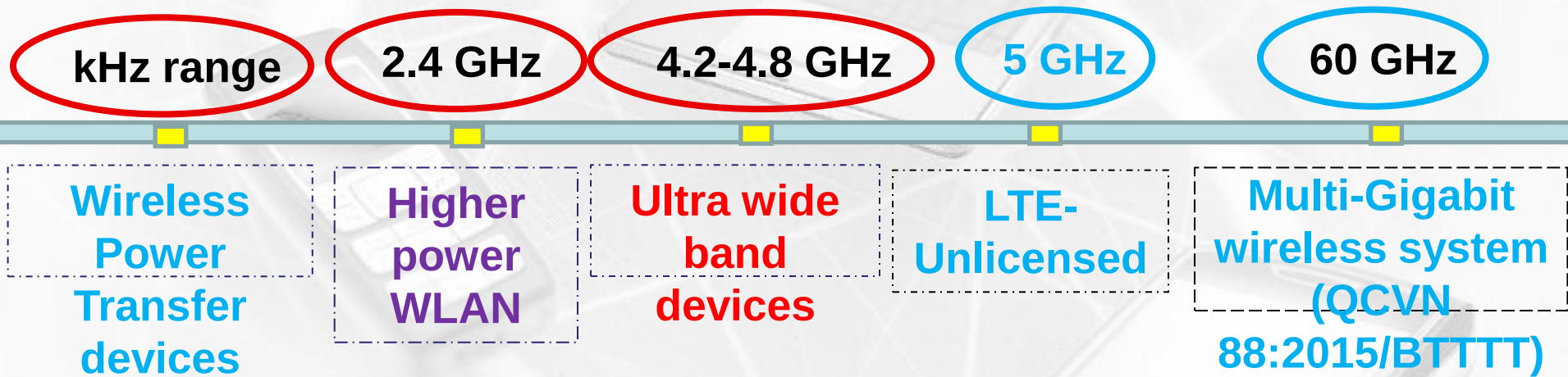
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# Unlicensed radio devices

Under consideration



❑ Harmonization of technical regulations for SRDs usage is needed to bring huge benefits for end users, manufacturers and regulators



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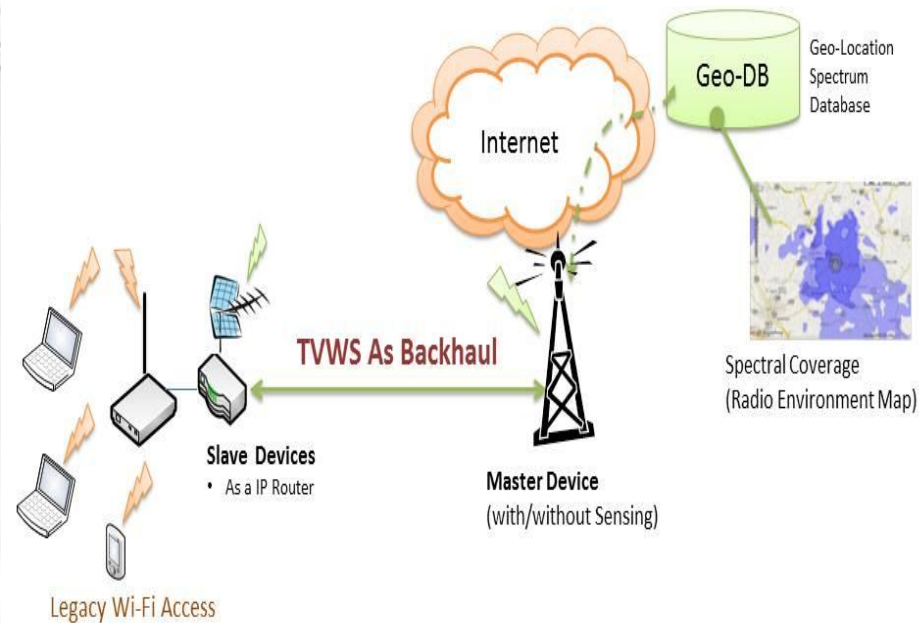
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# TV White Space

A snapshot of TVWS test result  
(2013-2015):

- Coverage: 7 km (urban), 3-6.5 km (rural), 4 km (mountain)
- Channel bandwidth: 8 MHz
- Data rate: 18.29/15 Mbps
- 470-694 MHz band





# Conclusion

- Efficient Spectrum utilization
- Harmonization of radiocommunications systems
- Avoid harmful interferences
- Contribution for promoting radiocommunication development of the region and would wide.



# Thank you for your attention!

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