

Utilization of the DD

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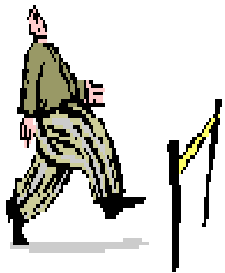
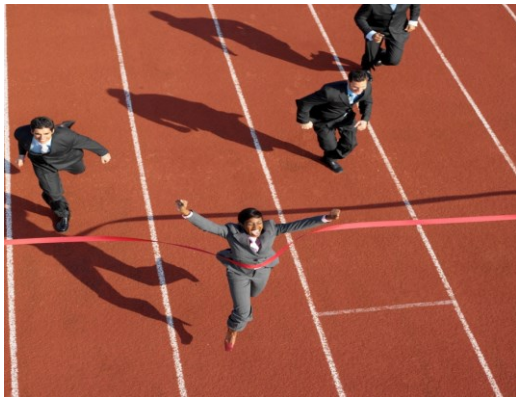
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Overview

- ASO/DSO status in Region 1
- Digital Dividend (s)
- How to ensure the max of DDs?
- Why the 700 MHz allocated to mobile?
- 700/800: Feasibility and complications
- Regional positions on the DDs
- GE06 Status
- Recommendations

1



Transition accomplished!
Let us start transition to DVB-T2

2



Transition going-on. Only
DVB-T2?

3



Start of Transition: DVB-T2



Some of DSO/ASO advantages

New possibilities to the viewers:

- Additional number of programs
- Reduction of transmission costs (Sharing infrastructure)
- Additional reception modes: portable and mobile reception
- Improved quality of image and sound including HDTV
- Additional type of services: interactivity, Electronic Program Guides, etc.

Attractive

Advantages for Regulators :

- Fair competition: To make a terrestrial platform competitive with cable and satellite platforms
- To be in line with GE06 Plan (as from 2015 no protection of analogue TV)
- Free a part of the UHF Band for mobile Broadband (WRC-07/WRC-12)

Efficient use of Spectrum

TV operators/content providers:

- Significant decrease in transmission costs comparing to analogue:
 - Power costs: DTT requires less energy to ensure the same coverage as for the analogue,
 - Investment cost: One DTT transmitter to broadcast multiple channels/programs.

Good for the environment

Development of new TV services without spectrum constraints.
Offering of new innovative services (mobile TV , data, games, interactivity, VoD,...).



DVB-T2 to gain even more spectrum?

DVB-T2

- At least 30%-50% higher transmission capacity, more efficiency
 - improved SFN performance and larger scale SFN than DVB-T
 - DVB-T2 provides Data rates between 50% and 90% higher than DVB-T for the same level of robustness
 - DVB-T2 provides Ability to reuse existing reception antennas.
 - reduction in the peak to average power used in the transmitter station by 25%
-
- 2011 update added the T2-Lite subset for mobile and portable reception.
 - Supports SD, HD, UHD, mobile TV, or any combination

Compression (in 1 channel 8MHz)

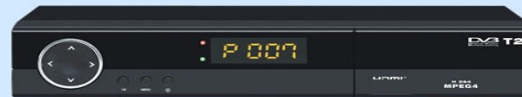
- MPEG2/H.262:
4-6 programs SDTV
- MPEG4 AVC/H.264:
6-10 SDTV programs
4-6 HDTV programs
- H.265 High Efficiency Video Coding (HEVC):
double the data compression ratio compared to H.264, can support [8K UHD](#)



Price?

- A multitude of DVB-T2 set-top boxes and integrated TV receivers are now available and prices have already dropped, ex.: STP to around 25 USD.
- The price difference between comparable DVB-T and T2 integrated TV sets is already negligible.

GET DIGITAL READY, LOOK OUT FOR
DVB-T2 MPEG-4 Set Top Box



Digital Dividend (s)

**470-862
MHz: DTT**

**694-790
MHz: DD2**

**790- 862
MHz: DD1**

- Is the amount of spectrum in the frequency band 470-862 MHz to be released after the switch-off of analogue TV
- DD1: The band 790-862 MHz (WRC-07) Region 1
- DD2 : The band 694-790 MHz band (WRC-12) Region 1

Benefits of Harmonization

- economies of scale,
 - Can decrease terminal costs by **50%** (also offer better performing phones, more choice)
 - Reduces the complexity of the radio design
- international roaming, Enables global roaming
- Interoperability,
 - Reduces interference with adjacent services and helps managing cross-border interference...

Why 700 MHz for MEA?

- Several countries in MEA use 850MHz for other services and so cannot make the 800 MHz band available for Mobile. **Replacement**
- The penetration of fixed broadband is very low or infrastructure not sufficient. **Extension**
- Demand for mobile data services is growing and more spectrum is needed to accommodate this demand. **Accommodate the increasing demand**
- A dynamic wireless broadband industry to contribute in the economic growth and job creation. **Improve national economy**

● Limited use of terrestrial TV

- Low penetration for Terrestrial broadcasting , compared with other TV platforms and/or provides few TV channels.
 - **Limited number** of TV channels.
 - Late introduction allows the choice of DVB-T2 → very efficient spectrum consuming : Larger DD
-
- **the 700MHz allocation in Region1 raises the prospect of harmonization with other ITU world regions.**

Feasibility in 700 MHz

- Countries in MEA started planning DSO later than European and are well positioned to use newer technologies, such as DVB-T2 and MPEG-4/H.256, which offer better spectral efficiency.
 - Spectrum in the 700MHz band could be made available by most regulators in the MEA **before 2015**
- In Europe, in contrast, most countries planned DSO some years ago and hence use DVB-T with multi-frequency networks (MFNs) for an extensive DTT. Substantial planning would be needed to migrate to the more-recent technology option of DVB-T2 with single-frequency networks (SFNs).
 - expected to be available in Europe until around **2022–2023** because of the complexity of moving DTT from this band.



Aeronautical navigation services in the 700MHz and 800MHz bands

- ITU Radio Regulation No. 5.312 designates an additional allocation for aeronautical radio navigation service on a primary basis in 645–862MHz in the following countries: Armenia, Azerbaijan, Belarus, Bulgaria, the Czech Republic, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Moldova, Mongolia, Poland, Romania, the Russian Federation, Slovakia, Tajikistan, Turkmenistan, Ukraine and Uzbekistan. However, this allocation is **protected** only until **June 2015**.
- The CEPT has urged CEPT Administrations to take all practical steps to clear the band 645–960MHz of assignments for aeronautical radio navigation services and this is beginning to happen. Russia (July 2012), Romania (the fourth quarter of 2012), Slovakia (2012) already awarded licenses in the 800MHz band, and Poland (2015).

Wireless in the 700 MHz

- **Program making and special events (PMSE)**
 - PMSE currently uses 700MHz spectrum in countries where this band is used for DTT, and is represented by powerful lobby groups. PMSE uses interleaved spectrum (white space) throughout the DTT range, so reducing availability of DTT spectrum would cut the amount of spectrum available for PMSE.
- **Public protection and disaster relief (PPDR)**
 - There are strong calls for more spectrum to be allocated to PPDR to help to modernize public safety. WRC-15 is expected to discuss the suitability of 700MHz spectrum for PPDR
 - Agenda item AI1.3 of WRC-15.

A diagram consisting of two large, light blue arrows pointing in opposite directions. The left arrow points left and contains the text 'Regional Preliminary Positions'. The right arrow points right and contains the text 'on A.I. 1.1 and 1.2 of the WRC-15'. The arrows are positioned horizontally across the center of the slide. In the background, there is a faint, large watermark of a globe with a red lightning bolt, similar to the ITU logo.

Regional
Preliminary
Positions

on A.I. 1.1 and 1.2
of the WRC-15

Regional preliminary positions/decisions on 1.1 *

Allocation of the 470-694/698 MHz to MS



- The frequency band is under consideration with a view to develop APT Preliminary views for WRC-15 agenda item 1.1



- No Allocation in this band. Except Egypt which supports further studies in this band.



- To be excluded from bands to be identified for IMT Services as the band planned for DTT in Africa.



- subject to further consideration taking into account sharing and compatibility studies.



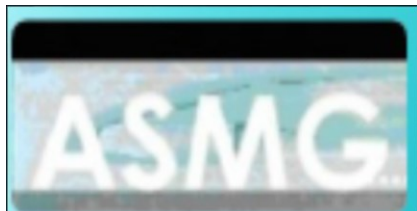
- object to the primary allocation to the MS and identification for IMT systems.



- Discussions have not ended

A

Allocation of the 694-796 MHz to MS and Refinement of the lower edge



- update the Table of Frequency Allocation to include the allocation of MS on primary basis.
- Modify footnote 5.317 A to extend the use of (IMT) in the band down to 694 MHz.
- Lower edge for MS: 694 MHz, and protection of the broadcasting service in particular channel 48.



- support the taking effect of the allocation immediately after WRC-15
- lower edge for MS at 694 MHz, support protection use of Channel 48 by UHF DTT



- support to set 694 MHz as the lower edge of the mobile allocation.



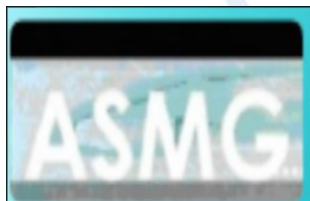
- the lower edge for MS shall not be lower than 694 MHz.

A

channeling plan



- frequency arrangements in the band 698-806 MHz as currently contained in ITU-R M.1036.



- Determination of the channeling arrangement option for the 700 MHz until WP 5D finalize the reply to the Liaison statement for JTG 4-5-6-7.



- support partial or full harmonization with the APT Plan, including associated technical parameters such as the OoBE



- Revision of ITU-R M.1036-4 to include harmonized channeling arrangements in R1:
 - 2x30 MHz FDD (uplink 703-733 MHz and downlink 758-788 MHz) aligned with the lower duplexer of Recommendation ITU-R M.1036-4 frequency arrangement A5.
 - Up to 20 MHz (738-758 MHz) for supplemental downlink.



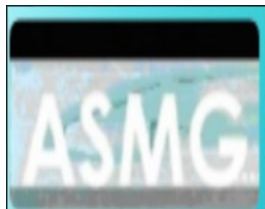
- consider the frequency arrangement based on the existing A5 arrangement in accordance with Recommendation ITU-R M.1036-4 (703-733 MHz for uplink, 758-788 for downlink) as a preferable one.

B

694-790 MHz to the MS and protection of the broadcasting service : Regulatory



- No additional constraint to R3.
- Encourage necessary action to be taken to include the allocation of 694-790MHz to the Mobile, in R1 in Article 5 of RR



- Support that GE-06 is enough to protect BS.



- GE06 Agr. contains necessary provisions to provide protection to the BS in neighbouring countries.



- GE06 to be applied. This is sufficient to ensure the protection of BC.
- opposes further conditions in the RR (e.g. 9.21, thresholds other than GE06).



- No restriction or additional requirements to the BS.
- GE-06 Agr. to be applied + additional regulatory and technical conditions (aggregate interference effect from the MS).



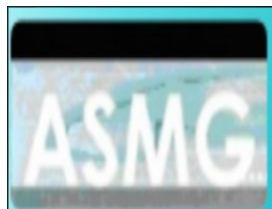
- There is no basis for any change to the Radio Regulations being addressed under agenda item 1.2 that pertain to, or otherwise impact, Region 2.

Regional preliminary positions/decisions on 1.2-Issue B

Protection of the broadcasting service : Technical (OOBE limit in the band 470-694 MHz for IMT terminals and coordination distance/FS)



- OOBE value to be used for Region 1 and I.R of Iran, should be based on the results of compatibility studies.



- OOBE level : - 25dBm /8MHz.
- Support the FS as a coordination basis and not the separation distances.
- (Except Algeria)



- Include associated technical parameters such as the OoBE



- OOBE level : -42dBm /8MHz.
- To ensure coexistence between ARNS & MS, and to avoid undue separation distances and coordination burden,
- supports bilateral or multilateral agreements before WRC-15 based on a common coordination framework.

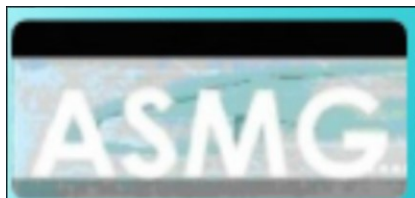


- GE-06 Agreement + additional regulatory and technical conditions taking into account the aggregate interference from the MS stations in the main & adjacent frequency bands.



- Sharing & compatibility methodologies undertaken for WRC-15 Agenda Item 1.2 will not a priori be agreed for application to studies under agenda item 1.1;

SAB/SAP applications (Issue D)



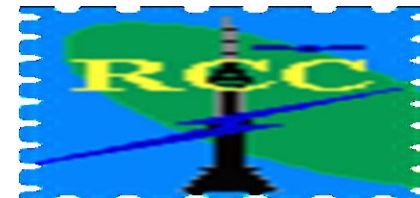
- to follow up the results of the CG concerning the requirements of applications ancillary to broadcasting requirements, and look into the suggested methods (D1) which invites to modify the footnote 5.296 to include identification for applications ancillary to broadcasting and put a limit for the footnote in the band (470-694 MHz).



- Continue studying the issue



- CEPT supports studies on solutions for applications ancillary to broadcasting including compatibility considerations as well as possible revisions of RR 5.296.
- CEPT considers conducting studies aiming at finding new tuning ranges for wireless microphones, e.g. within the band 1350-1400 MHz.

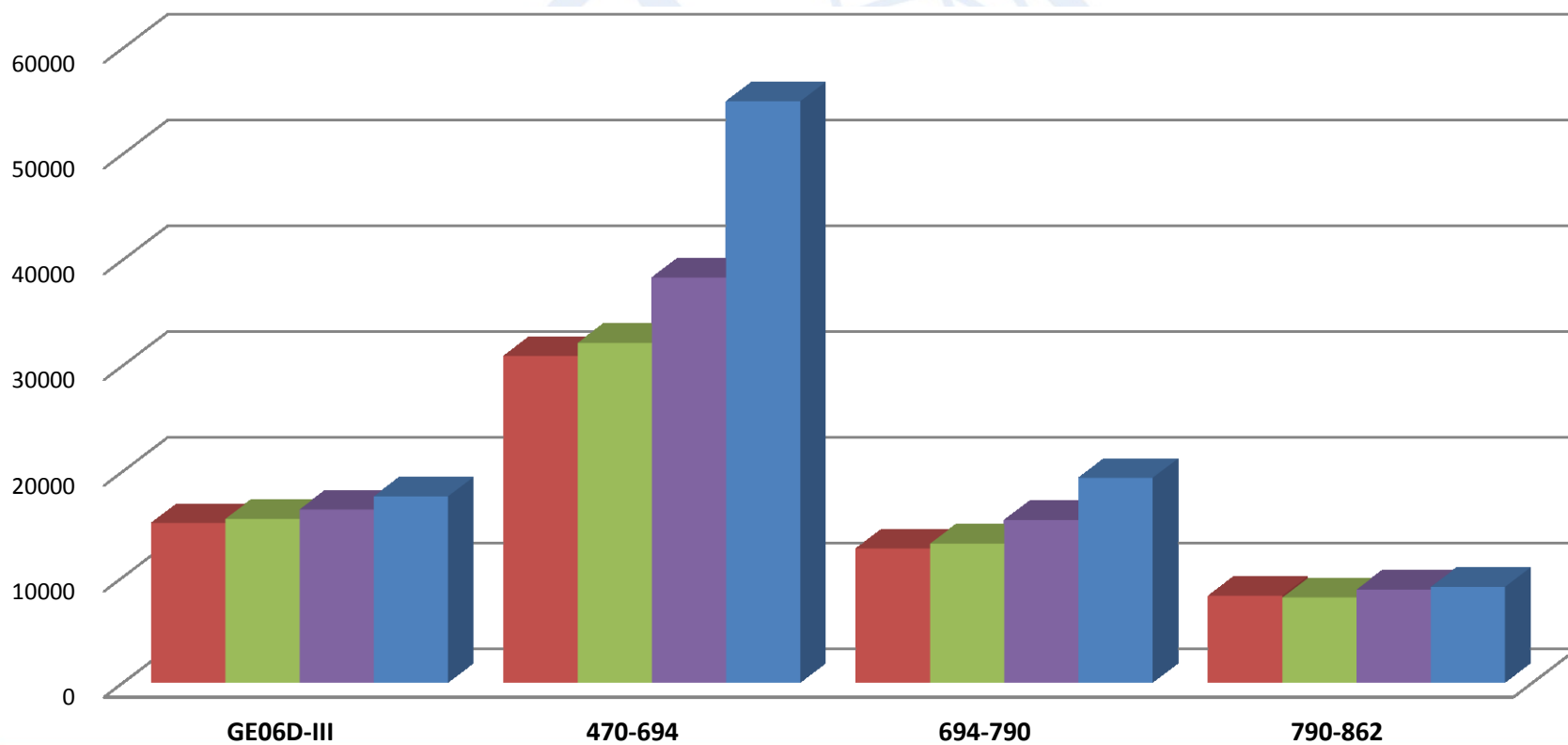


- The draft position is under development.
- While choosing the frequency arrangement, the usage of the frequency band 694-790 MHz by the ancillary broadcasting applications shall also be taken into account.

GE06

status

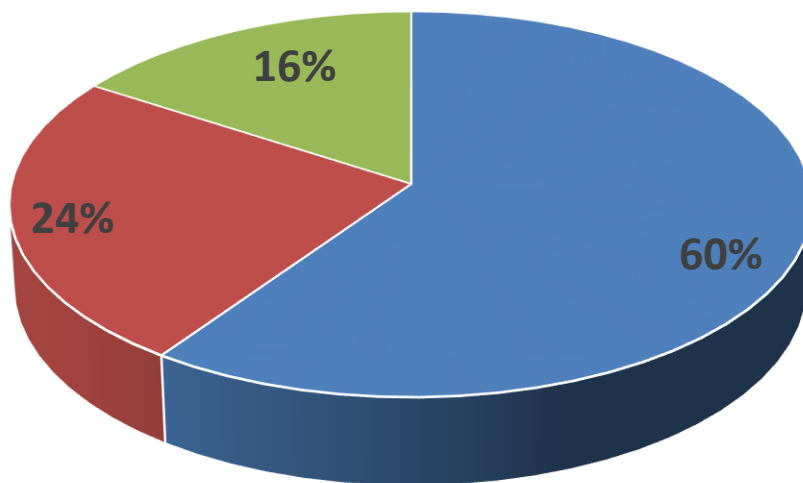
DVB-T Plan entries



GE06D: UHF occupancy 2006-2014

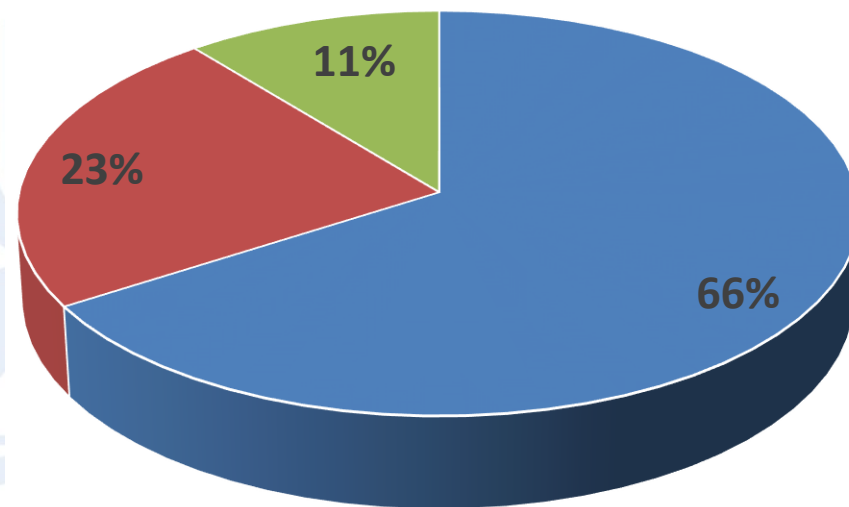
GE06D- UHF occupancy-2006

■ 470-694 ■ 694-790 ■ 790-862



GE06D- UHF occupancy-2014

■ 470-694 ■ 694-790 ■ 790-862



Recommendations

- The broadcasting community to implement technological innovations, such as:
 - DVB-T2, compression technologies, and
 - single-frequency networks (SFNs)
- → increase spectrum efficiency and enable DTT platforms to provide
 - more high-definition (HD) services, which would make DTT services **more attractive** to consumers
 - and **use less spectrum**.
- Use TV frequencies < 694 MHz
- Harmonize the 700 and 800 MHz bands for the Mobile

Thank you for your attention

