

Cable Network Situation in Japan and Requirements for EPoC

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CATV Situation in Japan

CATV situation

CATV situation as of September, 2012 provided by the ministry of Internal Affairs and Communications :

- Total no. of subs : **28 M** households
- Penetration rate : **52 %**
- Total no. of operators : **550**
 - using FTTH/B access : **224 (41 %)**
 - HFC : **293 (53 %)**
 - only Coax : **33 (6 %)**

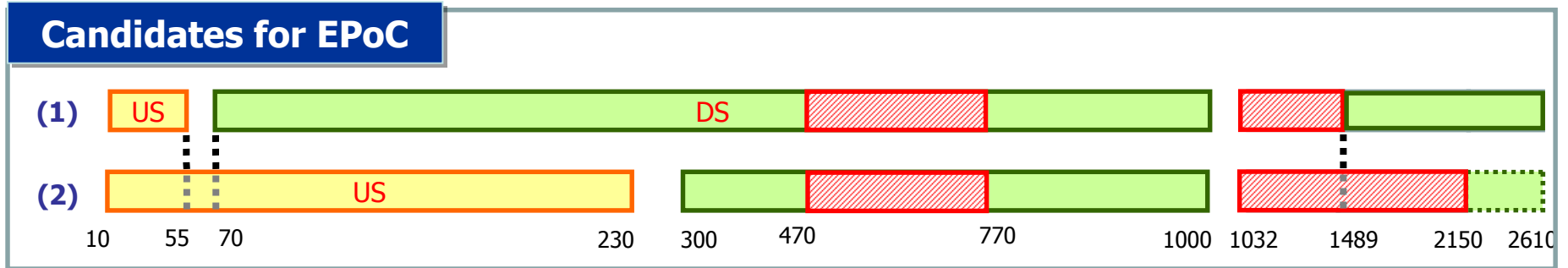
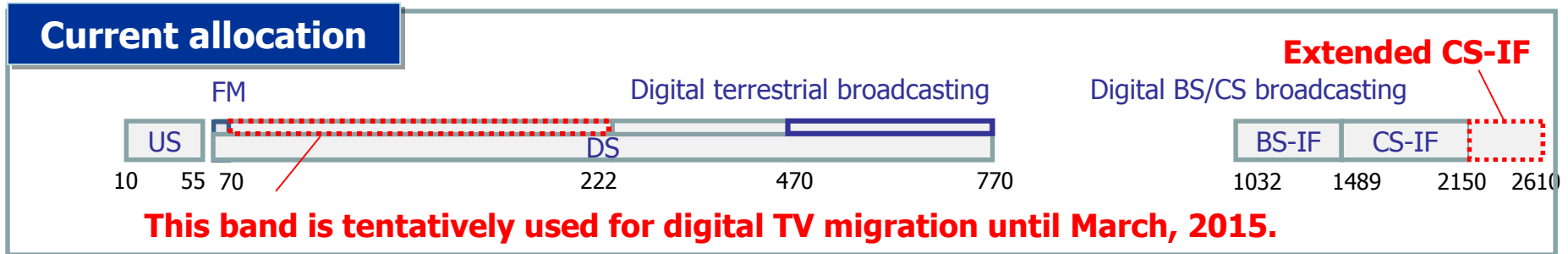
(source) http://www.soumu.go.jp/main_sosiki/joho_tsusin/pdf/catv_genjyou.pdf

MDU subs.

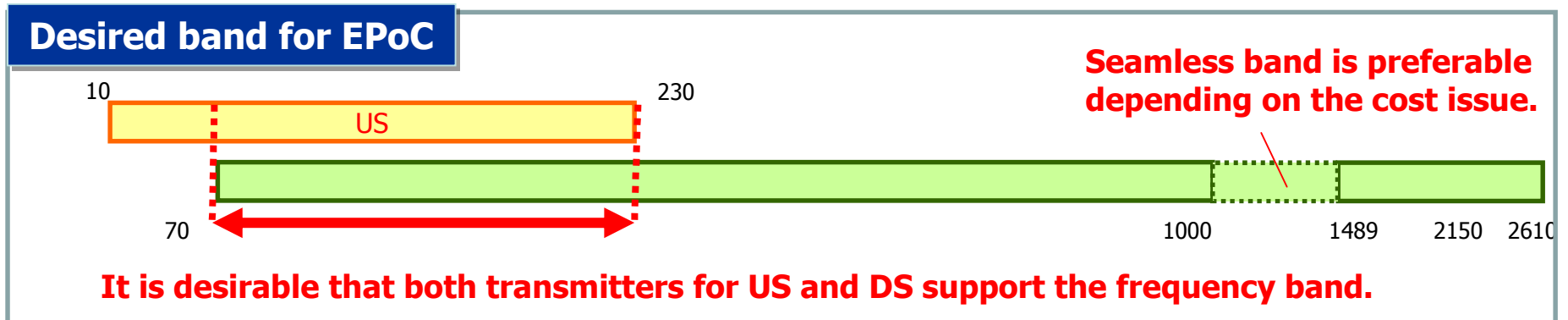
MDU data provided by a major MSO :

- **50%** of the total no. of subs. in Tokyo metropolitan area
- No. of subs/MDU : **< 256 - 98.5 % coverage**
 - < 128 - 92.5 %**
 - < 64 - 76.1 %**

Candidates of Frequency Allocation



The desired band to include all the candidates is shown in the following figure.



Requirement on Frequency Plan

Frequency plan

- **US : 10-230 MHz**
- **DS : 70-1000 MHz, - 2610 MHz**
- **The overlapped band of 70-230 MHz should be configurable for both US and DS use flexibly by operators.**

Sub-band exclusion

- **OFDM channel band should be turned on and off flexibly with a band resolution of less than 2 MHz.**
 - **The following bands should be excluded in Japan;**
 - **470-770 MHz for digital terrestrial TV broadcasting**
 - **1032-1489 MHz for BS TV broadcasting**
 - **Broadcasting TV channels use 6 MHz slot in general, although there are also exceptions of 4 or 8 MHz.**

Requirement on Technologies

Transmission technology

- **Low-cost technologies and schemes are definitely preferable.**
- **FDD is mandatory and there is no strong demand for TDD.**
- **The interference with mobile phone services and ITU-T G.9960 (G.hn) Annex C specification should be considered.**

Cable distribution network (CDN)

- **The currently deployed CDN should not be changed.**
- **More than 128 CNUs/CLT should be mandatory, and 256 CNUs /CLT is preferable.**
- **The required signal power must be decided in considering the cable network infrastructure conditions.**

Quality

- **It is desirable that EPoC system keeps the same level of qualities on network and application such as primary telephone.**

Further Study

Several issues should be discussed ongoingly in consideration of both economic and technical feasibilities.

Cable distribution network (CDN)

Network condition differs according to operators and areas. The current candidates are as follows:

- **No. of amp and corresponding frequency band**
 - **N+1~4 (at most) for MDU in ~ 2.6 GHz**
 - **N+7 (at most) for HFC in ~ 770 MHz**

Conclusion

Requirements

(1) Frequency plan

- Frequency plan : 10-230 MHz (US), 70-1000 MHz, - 2610 MHz (DS)
- The overlapped band of 70-230 MHz should be configurable for both US and DS use flexibly by operators.

(2) Sub-band exclusion

- OFDM channel band should be turned on and off flexibility with a band resolution of less than 2 MHz.

(3) Transmission technology

- Low-cost technologies and schemes are definitely preferable.
- FDD is mandatory, and the interference with mobile phone services and ITU-T G.9960 specification should be considered.

(4) Cable distribution network

- The currently deployed CDN should not be changed.
- More than 128 CNU/CLT should be mandatory, and 256 CNU/CLT is preferable.