JLabs
Japan Cable Laboratories

ITU-T J. Supplement 11 and other ITU-T SG21 WP1 activities relevant to ITU-D

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ITU-T J. Supplement 11 (10/2025)

Guidelines for installing a digital television service for cable networks based on ITU-T Recommendations

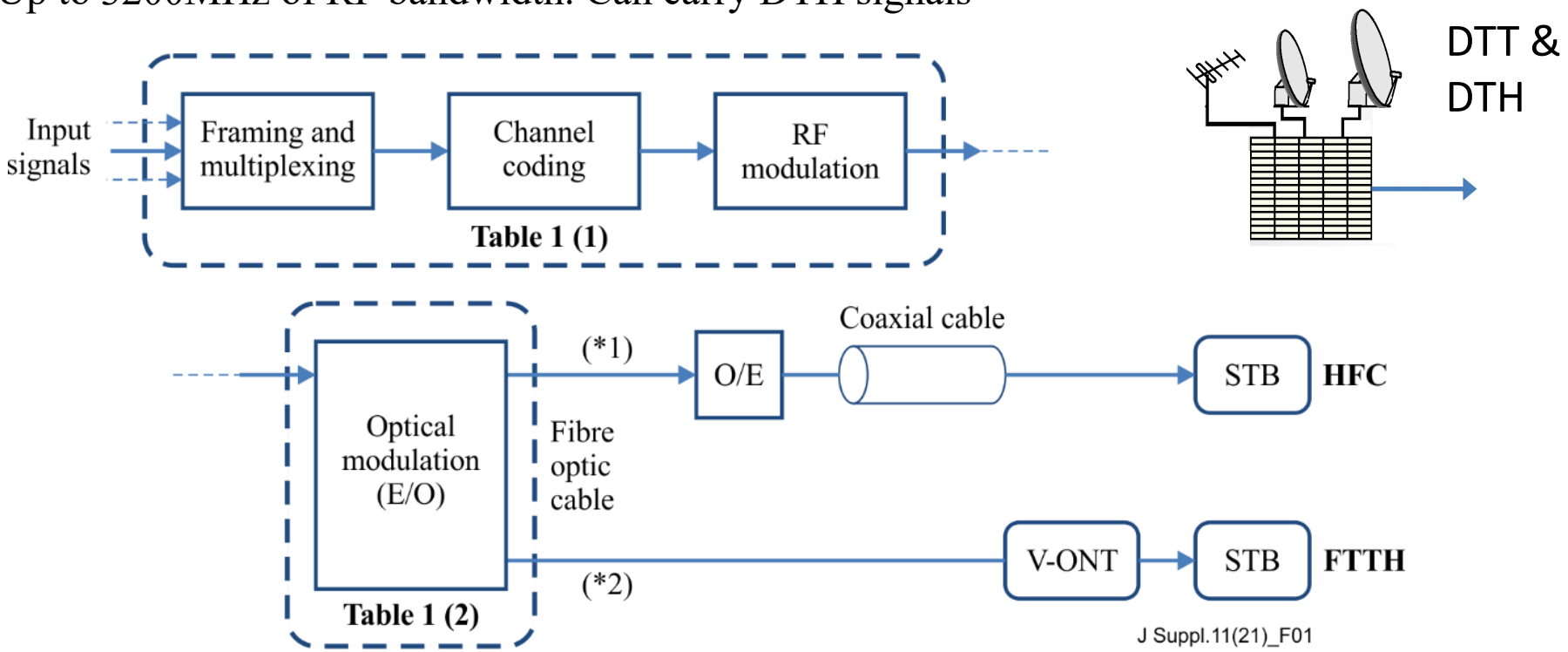
Summary:
Several developing countries are planning to deploy fibre optic facilities and advanced digital transmission over hybrid fibre/coaxial (HFC) with the objective of introducing digital cable television services on their infrastructure.
Supplement 11 to the ITU-T J-series provides guidelines to be considered by countries developing their system based on ITU-T Recommendations

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Figure 1 Cable television HFC and FTTH facilities

- **Two main transmission lines for cable television:**
  - **HFC – Hybrid Fibre/Coaxial**: Fibre optic cable up to Node near subscribers, then converted to coaxial cable to connect subscribers.
    - Up to 800MHz of RF bandwidth. Can carry DTT signals
  - **FTTH – Fibre-to the Home**: Fibre optic cable end to end to connect subscribers.
    - Up to 3200MHz of RF bandwidth. Can carry DTH signals



NOTE – Fibre optic cable at (*1) and (*2) uses different wavelength.

Example of RF Spectrum on HFC/FTTH

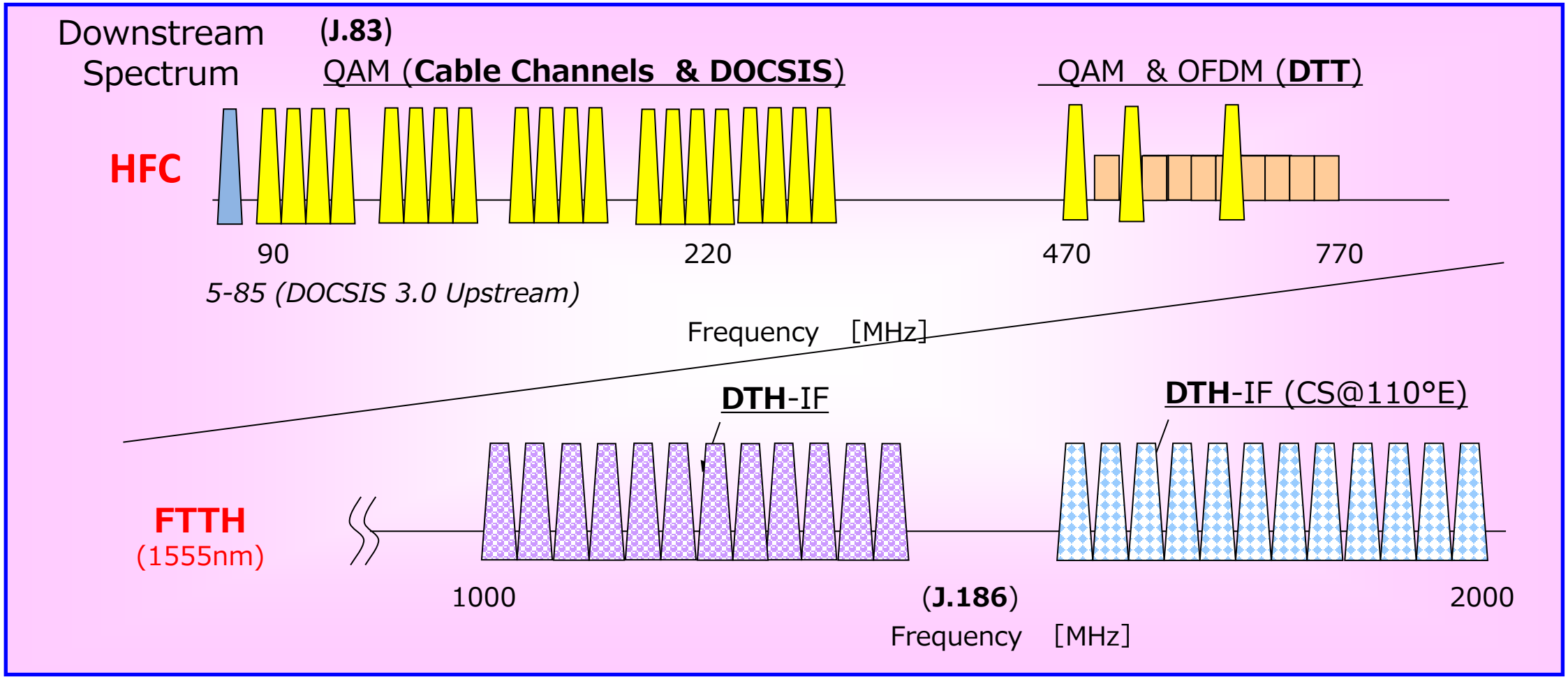
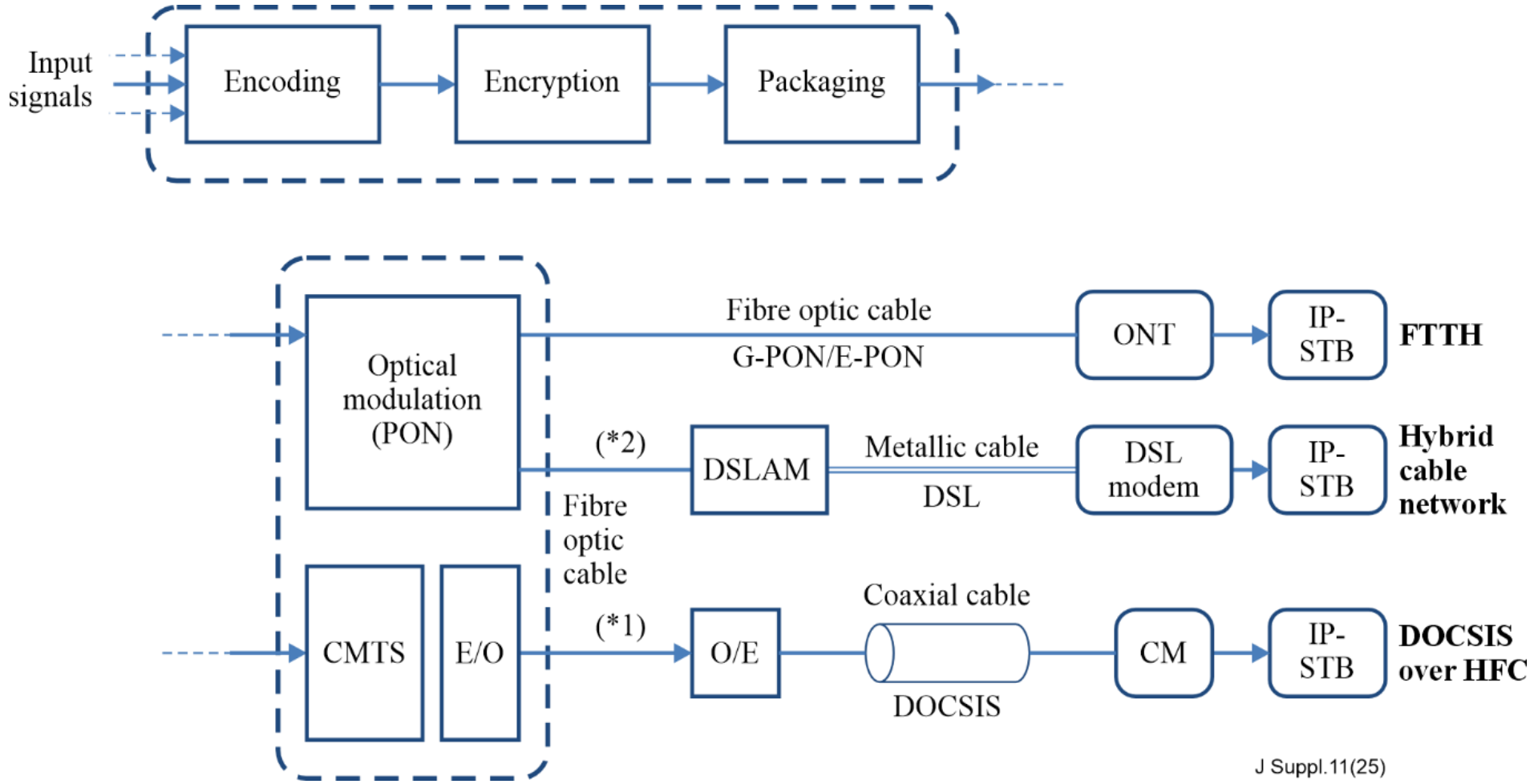


Table 1 – ITU-T Recommendations applicable to digital cable television(CATV) services based on fibre optics and HFC networks

	Title	Description
(1) Framing to RF modulation		
[ITU-T J.83]	Digital multi-programme systems for television, sound and data services for cable distribution	Single MPEG-2 transport stream over a quadrature amplitude modulation (QAM) channel
[ITU-T J.183]	Time-division multiplexing of multiple MPEG-2 transport streams and generic formats of transport streams over cable television systems	Time division multiplexing (TDM) of multiple MPEG-2 transport streams, and framing structure for high-speed transmission by channel-bonding
[ITU-T J.288]	Encapsulation of type length value (TLV) packet for cable transmission systems	Encapsulation of TLV over an [ITU-T J.83] and [ITU-T J.183] cable channel to transmit variable length packets such as IP packets
[ITU-T J.382]	Advanced digital downstream transmission systems for television, sound and data services for cable distribution	Advanced digital cable transmission with high spectral efficiency using OFDM and low density parity check code (LDPC), known also as DVB-C2
(2) Optical modulation		
ITU-T J.185	Transmission equipment for transferring multi-channel television signals over optical access networks by frequency modulation (FM) conversion	Frequency modulation before intensity modulation (Up to 1 GHz)
ITU-T J.186	Transmission equipment for multi-channel television signals over optical access networks by sub-carrier multiplexing (SCM)	Intensity modulation

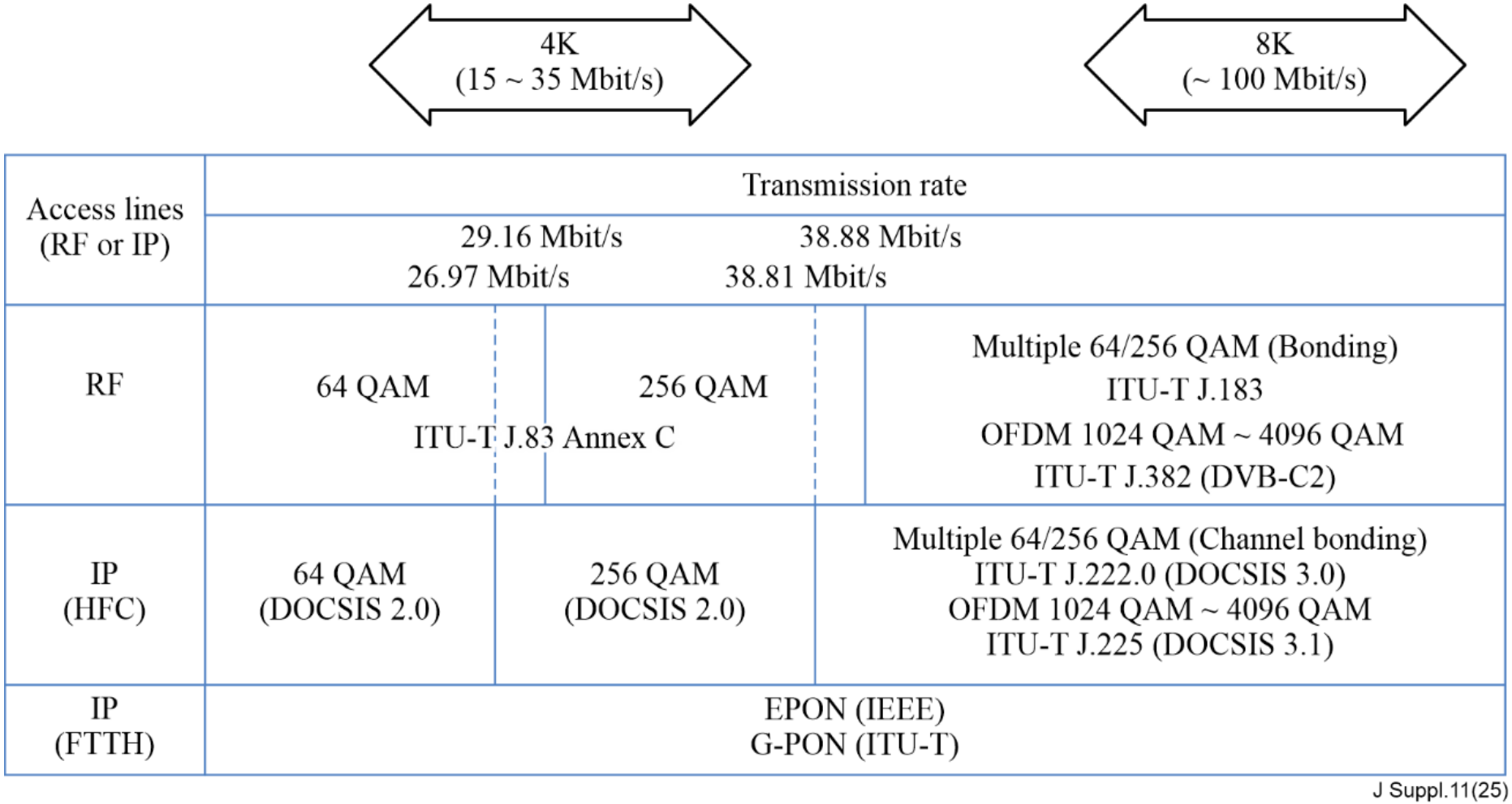
Figure 2 – Cable IPTV over FTTH, Hybrid cable network and DOCSIS



NOTE – Fibre optic cable at (*1) and (*2) uses different wavelength

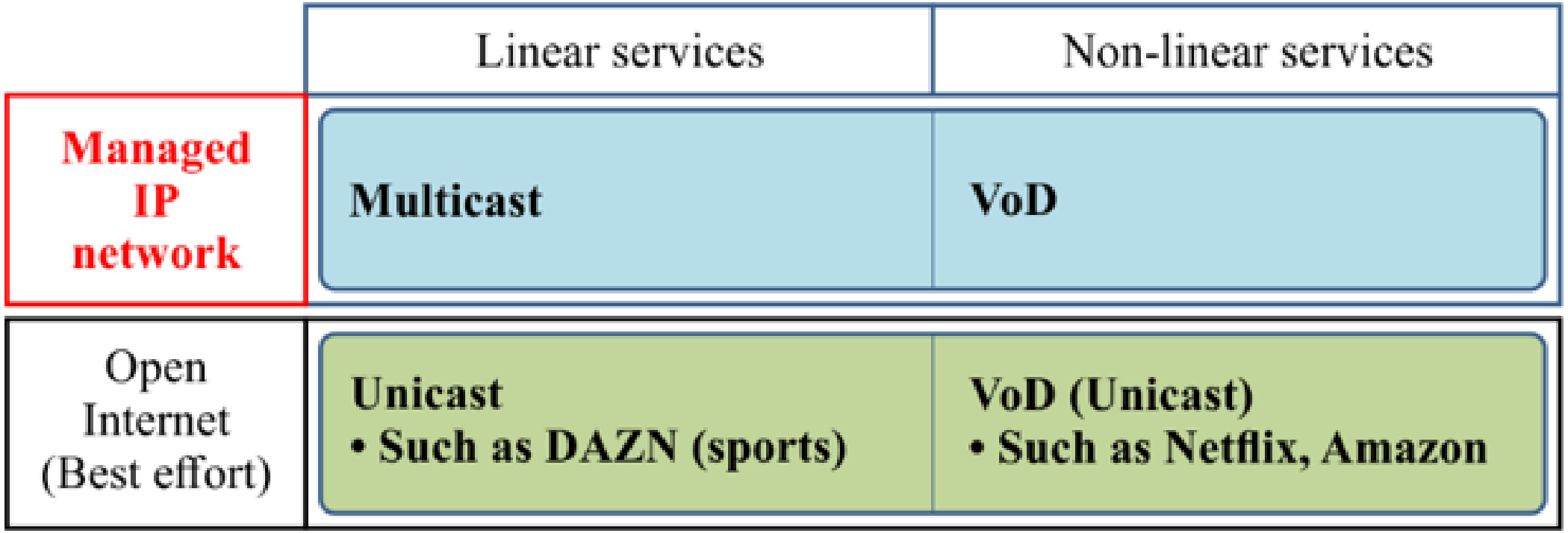
Editor's note: This figure will be revised based on actural use cases of hybrid cable network proposed

Figure III.1 – Cable access technology and transmission rate



NOTE – For ITU-T J.83 Annex A, transmission rate is 8/6 times (+33%) the above figures.

Figure II.1 – Classification of IPTV



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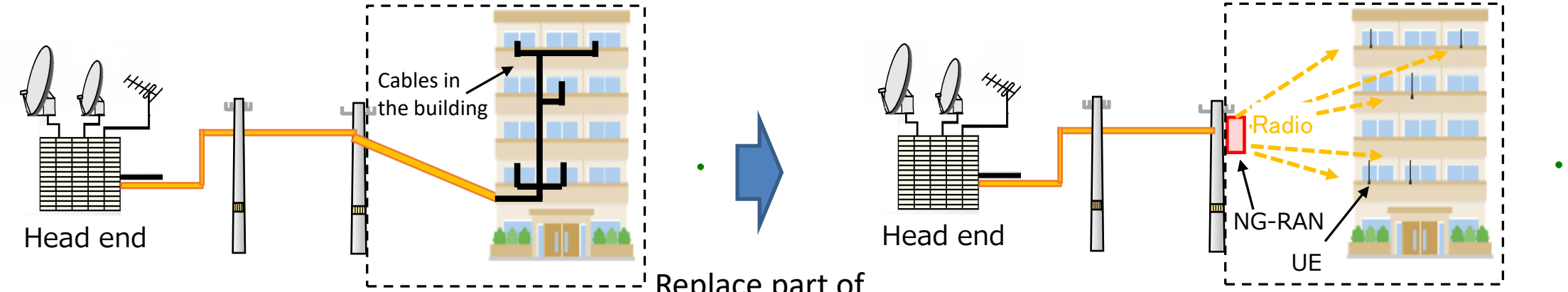
Use of radio systems to connect cable television end users

- J.151 (03/1998)
  - Operational functionalities for the delivery of digital multiprogramme television, sound and data services through multichannel, multipoint distribution systems (MMDS)
  - A classical Recommendation from 1998. Microwave radio system called MMDS used as extensions or alternatives to CATV networks.

- J.152 (07/2023) and J.153 (06/2024)
  - IMT-2020 systems, or 5G, used as alternatives of in-building wiring or extensions of CATV networks to remote areas.
  - J.152 for requirement and J.153 for system architecture.

- J.154
  - IMT-2020 MIMO systems used as alternatives or extensions of CATV networks

Using 5G to replace in-building cables



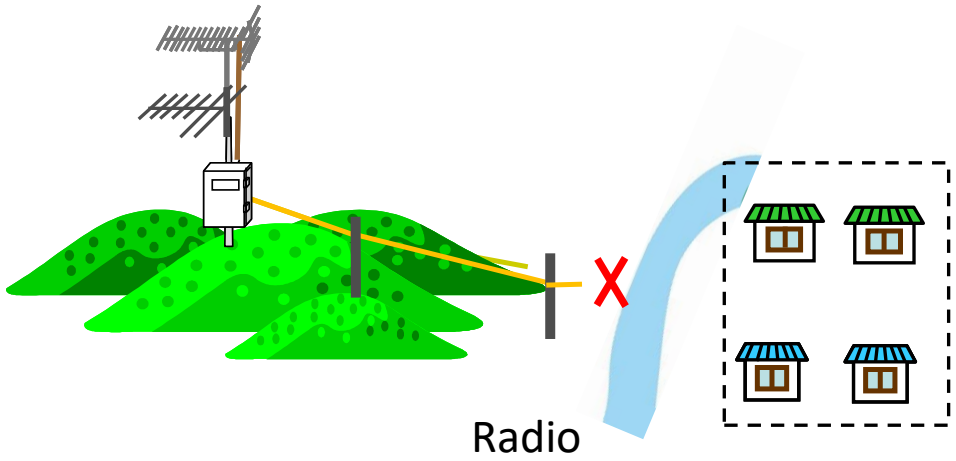
(With cables in the building)

Replace part of
the transmission line
with 5G

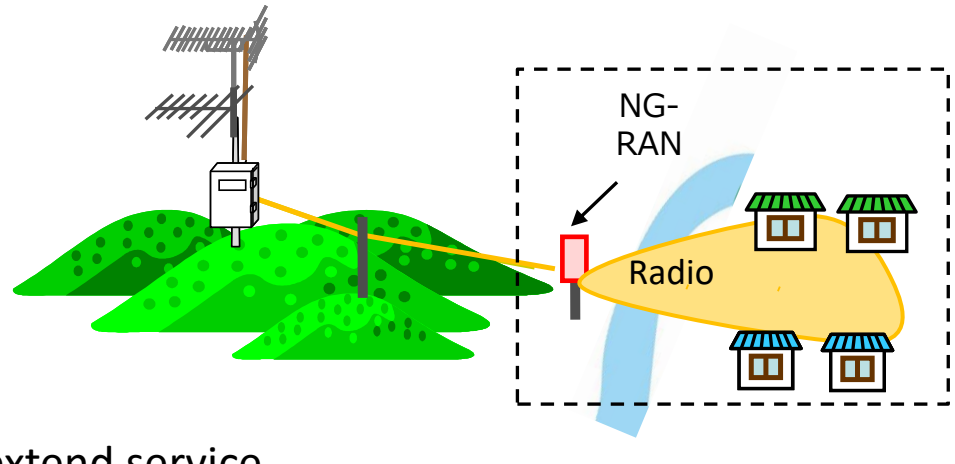
(Using 5G)

Improvement of cable television viewing environment in apartment complex using 5G

Using 5G to extend cable television into remote areas



Use 5G to extend service coverage



Extension of the cable television system in/into remote areas using 5G

Thank you for your attention

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