RECOMMENDATION ITU-R BT.1299*

The basic elements of a worldwide common family of systems for digital terrestrial television broadcasting**

(Question ITU-R 121/11)

(1997)

The ITU Radiocommunication Assembly,

considering

a) the many benefits of common television broadcasting standards;

b) the current status of studies in different regions of the world;

c) ITU Recommendations for digital satellite and cable systems have been agreed;

d) that system specifications for digital terrestrial television are being prepared in several regions of the world;

e) that differing regulatory, marketing, and delivery environments exist in different parts of the world and that these and other factors will influence the choice of systems,

recommends

that the elements of a worldwide common family of systems for digital terrestrial television broadcasting should be based on the following:

1 Systems principles

1.1 The terrestrial system should have maximum commonality with other digital television delivery systems, such as satellite, cable, etc.

1.2 The broadcast systems should be designed as a "container", able to transport MPEG-2, and/or other data services, in a transparent and flexible way.

1.3 The multiplex structure should be the MPEG-2 transport stream.

1.4 The systems should permit statistical multiplexing.

1.5 Together with alternatives, the potential use of an RS FEC outer code system should be studied, and if considered acceptable, efforts should be made to study the practicality of receivers which could decode all types of RS FEC in use.

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* Radiocommunication Study Group 6 made editorial amendments to this Recommendation in 2002 in accordance with Resolution ITU-R 44.

** This Recommendation should be brought to the attention of Telecommunication Standardization Study Group 9.

1.6 The base system should be a single layer system capable of conveying, for example, one HDTV service (at, for example, main profile @ high level) or a number of conventional quality services (for example main profile @ main level). The number of conventional quality services per channel will depend on the quality required, programme content and on whether statistical multiplexing is used.

1.7 A service information and header descriptor system should be implemented.

2 Baseband coding principles

2.1 The image coding system should use the MPEG-2 image coding family, and be capable of using the main profile @ main level or higher.

2.2 The sound coding system should be as given in Recommendation ITU-R BS.1196 (see Note 1).

NOTE 1 – Recommendation ITU-R BS.1196 recommends use of the International Organization for Standardization/ International Electrotechnical Commission Standard 13818-3 (ISO/IEC 13818-3) MPEG-2 audio layer II or AC3. Since these two coding systems are in any event being used by different digital packaged media, a common decoder could be an advantage for some consumers.

2.3 The ITU-R should try to set down quality requirements for the video and audio coding system performance. The basic audio and video coding specifications are of syntax only, and leave room for improvement in quality due to improvements in encoder design. Target minimum quality requirements should be given, and suggestions should be made for coder features which are recommended.

3 Modulation and channel coding principles

3.1 The modulation and channel coding should be selected to allow implementation of the required delivery approach. Possible delivery approaches include single-transmitter-per-channel (as in conventional analogue TV), on-channel repeaters (OCR), gap-fillers (GF), single frequency networks (SFN) at the local and regional levels. Orthogonal frequency division multiplexing (OFDM) or 8-VSB (vestigial sideband) should be used depending, among other things, on the delivery environment.