RECOMMENDATION ITU-R BS.774-2

SERVICE REQUIREMENTS FOR DIGITAL SOUND BROADCASTING TO VEHICULAR, PORTABLE AND FIXED RECEIVERS USING TERRESTRIAL TRANSMITTERS IN THE VHF/UHF BANDS

(Question ITU-R 107/10)

(1992-1994-1995)

The ITU Radiocommunication Assembly,

considering

a) that there is an increasing requirement worldwide for suitable means of broadcasting high-quality stereophonic sound of two or more channels with subjective quality indistinguishable from high-quality consumer digital recorded media (“CD quality”) to vehicular, portable and fixed receivers;

b) the limitations of the existing VHF/FM sound broadcasting services to fulfil such requirements, particularly for vehicular and portable reception;

c) that the present congestion in some countries in the utilization of the VHF/FM frequency band causes a generally increasing level of interference and limits the number of programmes which can be transmitted;

d) that technical developments in source and channel coding, modulation and advanced digital signal processing, have demonstrated the technical feasibility and maturity of digital sound broadcasting systems;

e) that a large series of demonstrations and field trials in various parts of the world have confirmed the technical feasibility and economic viability from a system design point of view of digital sound broadcasting systems;

f) that an advanced digital sound broadcasting system can provide better spectrum and power efficiency as well as better performance in multipath environments than conventional analogue systems;

g) that the complementary use of terrestrial and satellite systems can result in better power and spectrum efficiency through the implementation of hybrid and mixed terrestrial/satellite digital sound broadcasting service;

h) that a digital broadcasting system can be employed in both terrestrial and satellite applications using closely related emission signal parameters, thus allowing common receiver design with common processing VLSI circuits;

j) that sound broadcasting has always used similar modulation techniques throughout the world, such as AM or FM and similar, if not identical, frequency bands, leading to a receiver that could be used worldwide, for the benefit of the listener;

k) that extensive sound broadcasting services, both public and private, exist throughout the world that provide sound programmes to listeners,

recommends

that, when digital sound broadcasting services from terrestrial transmitters, intended for vehicular, portable and fixed reception, are introduced into the VHF and UHF bands, digital sound broadcasting systems to be used should have the following technical and operational characteristics and capabilities:

1 be capable of providing high-quality stereophonic sound of two or more channels with subjective quality indistinguishable from high-quality consumer digital recorded media (“CD quality”) to vehicular, portable and fixed receivers;

2 better spectrum and power efficiency than conventional analogue FM systems;

3 significantly improved performance in a multipath and shadowing environment through the use of frequency and time diversity and co-channel space diversity at the transmitting end when needed;

4 be capable of utilizing common signal processing in receivers for any terrestrial and satellite broadcasting applications;

5 allow configuration/reconfiguration in order to transmit sound programmes with lower bit rates to trade-off quality and the number of sound programmes available;

6 allow for a trade-off between extent of coverage for a given emission power, service quality and the number of sound programmes and data services;

7 be capable of allowing, with a common receiver, the use of all means of programme delivery, such as:

– local, sub-national and national terrestrial VHF/UHF network services;

– mixed/hybrid use of terrestrial and national/supra-national UHF satellite service;

– cable distribution networks;

8 be capable of providing enhanced facilities for programme-related data (e.g. service identification, programme labelling, programme delivery control, copyright control, conditional access, dynamic programme linking, services for visually and hearing-impaired, etc.);

9 allow for flexible assignment of services within a given multiplex;

10 a system multiplex structure capable of complying with the layered ISO open system interconnect model and permitting interfacing to information technology equipment and communications networks;

11 be capable of providing value-added services with different data capacities (e.g. traffic message channels, business data, paging, still picture/graphics, future integrated services digital broadcasting (ISDB), low bit-rate video/multiplex, etc.);

12 allow the manufacturing of low cost receivers and antennas through mass production.

NOTE 1 – An example of a digital sound broadcasting system (Digital System A) that meets the above technical and operational requirements and capabilities is described in Annex 1 to Recommendation ITU-R BS.1114.

NOTE 2 – System and service characteristics as well as radio-frequency aspects of digital sound broadcasting systems are considered in detail in the ITU-R Special Publication on Terrestrial and Satellite Digital Sound Broadcasting to Vehicular, Portable and Fixed Receivers in the VHF/UHF bands.

NOTE 3 – There is a closely related Recommendation ITU-R BO.789 for satellite sound broadcasting.