International Telecommunication Union

ITU-R

Radiocommunication Sector of ITU

Recommendation ITU-R BS.1894

(05/2011)

Digital radio broadcast service, captioned radio

BS Series

Broadcasting service (sound)

International Telecommunication Union

Foreword

The role of the Radiocommunication Sector is to ensure the rational, equitable, efficient and economical use of the radio-frequency spectrum by all radiocommunication services, including satellite services, and carry out studies without limit of frequency range on the basis of which Recommendations are adopted.

The regulatory and policy functions of the Radiocommunication Sector are performed by World and Regional Radiocommunication Conferences and Radiocommunication Assemblies supported by Study Groups.

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Series of ITU-R Recommendations

(Also available online at http://www.itu.int/publ/R-REC/en)

Series	Title
BO	Satellite delivery
BR	Recording for production, archival and play-out; film for television
BS	**Broadcasting service (sound)**
BT	Broadcasting service (television)
F	Fixed service
M	Mobile, radiodetermination, amateur and related satellite services
P	Radiowave propagation
RA	Radio astronomy
RS	Remote sensing systems
S	Fixed-satellite service
SA	Space applications and meteorology
SF	Frequency sharing and coordination between fixed-satellite and fixed service systems
SM	Spectrum management
SNG	Satellite news gathering
TF	Time signals and frequency standards emissions
V	Vocabulary and related subjects

Note: *This ITU-R Recommendation was approved in English under the procedure detailed in Resolution ITU-R 1.*

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RECOMMENDATION ITU-R BS.1894*

Digital radio broadcast service, captioned radio

(2011)

Scope

This Recommendation describes mechanisms to support captioned radio broadcast services on the basis of terrestrial digital sound broadcasting systems described in Recommendation ITU-R BS.1114 as well as traditional analogue frequency modulation (FM) system(s).

The ITU Radiocommunication Assembly,

considering

a) that there are an estimated 650 million people worldwide with sensory disabilities;

b) that the goal of the United Nations *Convention on Rights of People with Disabilities* (CRPD) Article 9 is to: *Promote the design, development, production and distribution of accessible information and communications technologies and systems at an early stage, so that these technologies and systems become accessible at minimum cost*;

c) that the ITU Radiocommunication Sector has recognized the fundamental importance of *Bridging the disabilities Digital Divide* as a threshold initiative to improve access for all;

d) that digital radio systems of multiple types are now operational on a variety of continents;

e) that each digital radio system in operation supports multiple flexible service modes that in theory are capable of supporting transmission of live captioning;

f) that to implement those digital radio service modes will enable hundreds of millions of deaf and hard of hearing individuals worldwide to have access to the live radio medium;

g) that Recommendation ITU-R BS.1114 describes digital sound broadcasting (DSB) System A, also known as the Eureka 147 digital audio broadcasting (DAB) System; Digital System F, also known as the ISDB-T_{SB} System; and Digital System C, also known as the IBOC DSB System and System G, also known as the Digital Radio Mondiale (DRM) System;

h) that traditional analogue frequency modulation (FM) transmissions are capable of transmitting captioning as described in Recommendation ITU-R BS.643, known as the radio-data system (RDS), and described in Recommendation ITU-R BS.1194 System A, known as the data radio channel (DARC) System;

j) that consumer radio receivers are widely available today that have been shown to be configurable to display captioning,

* Radiocommunication Study Group 6 made editorial amendments to this Recommendation in 2011 in accordance with Resolution ITU-R 1-5.

recommends

1 that, in the case of programmes intended for radio broadcast using the ITU DSB systems described in Recommendation ITU-R BS.1114, appropriate modes should be identified in all systems to support captioned radio with a minimum 500 bit/s capacity, as described in Annex 1;

2 that, in the case of programmes intended for radio broadcast using traditional analogue FM methods, account should be taken in the guidelines for captioning described in Annex 2,

further recommends

1 that manufacturers of consumer radio receivers employing any or all of the ITU DSB System A, ITU DSB System F, ITU DSB System C, ITU DSB System G, and/or traditional analogue FM be strongly encouraged to produce receivers that display captioning in a way consistent with ITU-R Recommendations;

2 that broadcasters be strongly encouraged to transmit programmes with captioning as an integral part of their broadcast.

Annex 1

Mechanism for supporting captioning using ITU DSB systems

Abbreviations

AAS-CC Advanced application services – Closed caption

DAB Digital audio broadcasting

DRM Digital Radio Mondiale

DSB Digital sound broadcasting

IBOC In-band on-channel

MSC Main service channel

PES Packetized elementary stream

SB Integrated services digital broadcasting – terrestrial sound broadcasting

Table 1 lists the mechanisms and properties of ITU DSB systems with respect to their capability of transmitting captioning at a minimum 500 bit/s.

TABLE 1

Digital radio system	500 bit/s capacity	Mechanism for supporting captioning	
			Reference
Recommendation ITU-R BS.1114 System A (DAB)	Yes	MPEG Audio Layer II Ancillary Data	ISO/IEC 11172-3 and ISO/IEC 13818-3
Recommendation ITU-R BS.1114 System C (IBOC)	Yes	AAS – CC Service Token	NRSC-5B
Recommendation ITU-R BS.1114 System F (ISDB-TSB)	Yes	PES packets containing private data	ITU-T H.222.0 and ARIB STD-B24 Vol. 1 Part 3
BS.1114 System G (DRM)	Yes	DRM Packet Mode containing Journaline Objects	ETSI ES 201 980 and ETSI TS 102 979

References
(Informative)

(1) ARIB STD-B24 Vol. 1 Part 3: Data coding and transmission specification for digital broadcasting, Volume 1, Part 3 – Coding of caption and superimpose.

(2) ISO/IEC 11172-3: Information technology – Coding of moving pictures and associated audio for digital storage media at up to about 1.5 Mbit/s – Part 3: Audio.

(3) ISO/IEC 13818-3: Information technology – Generic coding of moving pictures and associated audio information – Part 3: Audio.

(4) ITU-T H.222.0: Information technology – Generic coding of moving pictures and associated audio information: Systems.

(5) NRSC-5B: In-band/on-channel Digital Radio Broadcasting Standard, National Radio Systems Committee (www.nrscstandards.org), April, 2008.

(6) ETSI ES 201 980: Digital Radio Mondiale (DRM); System Specification.

(7) ETSI TS 102 979: Digital Audio Broadcasting (DAB); Journaline; User application specification.

Annex 2

Mechanism for supporting captioning using traditional analogue FM

Abbreviations

DARC Data radio channel

ODA Open data applications

RDS Radio data system

Table 2 shows the mechanism and properties of traditional analogue FM systems with regard to their capability of transmitting captioning at a minimum 500 bit/s rate.

TABLE 2

Data channel system	**500 bit/s capacity**	**Mechanism for supporting captioning**	
			Reference
Recommendation ITU-R BS.643 (RDS)	Yes	ODA	IEC 62106 ed2.0
Recommendation ITU-R BS.1194 System A (DARC)	Yes	Mode 1 transmission data or Short Message Channel	ETSI EN 300 751

References (Informative)

(8) IEC 62106 ed2.0: Specification of the Radio Data System (RDS) for VHF/FM sound broadcasting in the frequency range from 87.5 MHz to 108.0 MHz.

(9) ETSI EN 300 751: Radio broadcasting systems; Data Radio Channel (DARC); System for wireless infotainment forwarding and teledistribution.