

Digital Sound Broadcast Data Inserter R&S DSIP020

DAB signals with flair: embedding data and auxiliary services

Digital audio broadcasting (DAB) networks are being implemented all over the world. They are highly popular with audio program transmission and data services. The R&S DSIP020 not only inserts IP-based data into DAB transmission signals, but also generates complete DAB signals.



FIG 1 The R&S DSIP020 can generate entire DAB signals.

More information and data sheets at
www.dbc.rohde-schwarz.com or
www.datacasting.rohde-schwarz.com



Data sheet DSIP020



Data sheet DM001



Data sheet
Web over DTV™



Data sheet
DTV WebCarousel™

REFERENCES

- [1] Web over DTV – Cost-attractive service through DVB: Transmission of extra data in Web format. News from Rohde & Schwarz (2000) No. 166, pp 18–19
- [2] Web over DTV – Broadcasting and the Internet: convergence through new applications. News from Rohde & Schwarz (2001) No. 170, pp 24–26

DSB – for data as well

Digital sound broadcasting (DSB) is highly reliable; mobile reception of emissions is excellent. The audio programs can be enhanced not only by program associated data (PAD). Additional non-program associated data (NPAD) services make new applications possible, e.g. transmitting computer data or applications directly into moving vehicles. Cars, trains, public transport and mobile users can thus be supplied with extra digital services.

The Internet protocol (IP) provides the basic requirements for transporting disparate data such as websites, computer games, databases, MP3 sound files, or even MPEG4-compressed video sequences and films.

The DSB Data Inserter R&S DSIP020 (FIG 1) is used for these purposes – in accordance with the standard it inserts data to be transferred from computer

networks via DAB transmission networks into the signals that are to be transmitted.

STI or ETI – whichever you require

The R&S DSIP020 is basically a generator producing a DAB-conformant output signal in which IP data is embedded as packet mode data in compliance with the standards (ES 201735 and TS 101759). It supports the new future-oriented service transport interface (STI) as standard. The service providers consequently enjoy maximum flexibility. When used with the DAB Multiplexer R&S DM001, a dynamic configuration of audio and data programs for DAB can be implemented via the STI protocol.

The R&S DSIP020 can be optionally expanded to output ensemble transport interface (ETI) signals, which are emitted by the DAB transmitters. The DSB data

► inserter can thus be connected directly to a transmitter without requiring other multiplexers. This makes for favourably priced DAB-based data transmitters. Transmission capacity can be stretched up to the maximum capacity of the ETI signal at approx. 1.5 Mbit/s for user data.

Modularly extendible up to enhanced data casting system

Several software components complement the DSB data inserter, ensuring that it provides a technical interface for the broadcasting system and supports a variety of other services [1, 2].

The *WebCarousel™* software transmits information that is available as files or is to be transmitted in file format, whereas *StreamConnector™* is used to emit streaming media, i.e. files of infinite length or information generated live (from MPEG cameras or MP3 sound). Streaming shortens the delay because media is output as soon as the first packets arrive and the user does not have

to wait until the complete file has been received.

MediaRouter™ supports the transition of IP networks to digital broadcasting as well as the management and quality of service (QoS) of the different services.

All modules can be combined: IP inserter and data generator with the complementary software system components, or all the way up to a multimedia object transfer protocol (MOT) carousel. A datacasting system with open interfaces for the flexible management of dynamic data services can thus be implemented. This enhanced datacasting system (EDS) will set new standards in digital broadcasting (FIG 2).

DAB signals for test purposes

The commissioning and testing of systems and data also requires the generation of test signals. It is too expensive to set up a complete mini DAB network in the lab or production plant just to test

a receiver or the correct installation in vehicles, for example.

Equipped with the optional ETI player, the R&S DSIP 020 can also be used as a DAB signal generator. In this case, data is not inserted, but an entire correct transmit signal (ETI) is generated, which users can select like a test pattern and configure to their requirements. Services with common audio test signals are available for use as standard test patterns. But it is also possible to simulate entire DAB ensembles with PAD data services as well as labels, traffic announcements and auxiliary services.

The DAB test patterns are emitted in a continuously repeating loop with the inserter directly connected to a transmitter or modulator.

An optimal solution is the use of the data inserter functioning as an ETI player in conjunction with the Test Transmitter R&S SDB 601. These two small units allow the simulation of a complete DAB signal that is similar to those used in

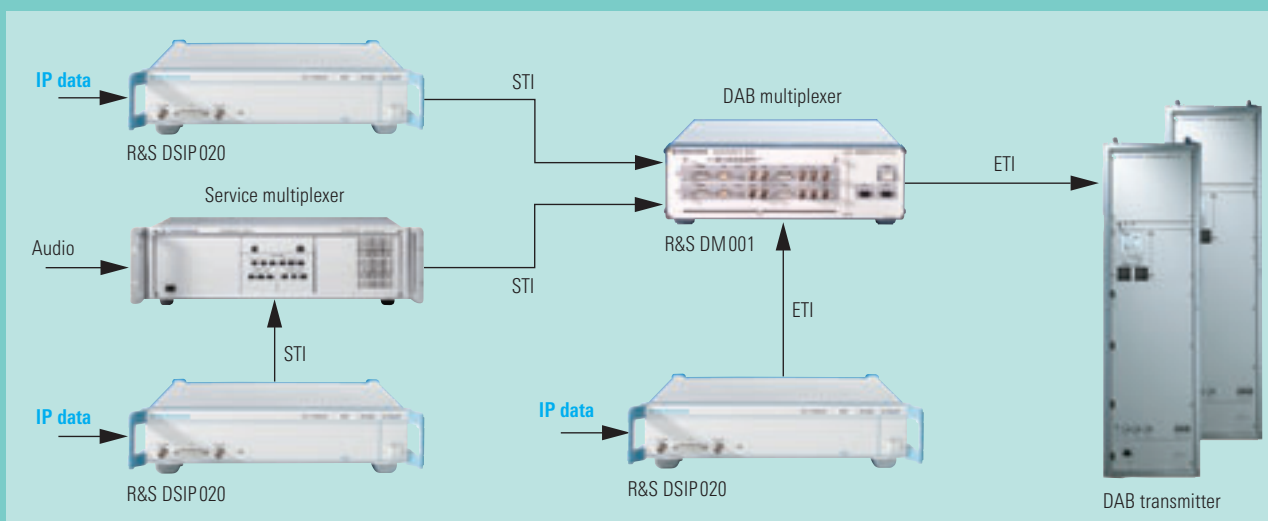


FIG 2 The DSB data inserter offers a wide variety of applications in DAB transmitter networks.

large transmitter networks and that covers both band III and the L band (FIG 3). If the test system is complemented by an external I/Q modulator (e.g. with the R&S SMIQ), simulation of transmission channel interference such as echo, fading or noise is also possible.

Integrated PC

The R&S DSIP020 is a PC-based inserter with Embedded WindowsNT™ as the operating system. Connected to a keyboard and monitor, it can be configured like a PC and is able to control instruments such as the Test Transmitter R&S SDB601 via a serial interface. The units can also be set by a remote administrator.

The *WebCarousel™*, *MediaRouter™* and *StreamConnector™* applications can be directly installed and run on the R&S DSIP020. In this case, the DSB data inserter is integrated like a PC into a computer network, and the data to be transmitted, e.g. files, is exchanged.

The R&S DSIP020 can store DAB test signals as files on its hard disk, which can later be selected and activated via the graphical user interface.

Versatile applications

The R&S DSIP020 expands DAB systems with:

- ◆ distribution of computer data and files via DAB
- ◆ mobile Internet services
- ◆ auxiliary data in line with the MOT streamer
- ◆ broadcasting of high-end compressed sound files (MP3, MP4)
- ◆ transmission of packed videos to vehicles (MPEG4)
- ◆ provision of program-independent additional information (traffic service, local news, instant news radio)

The DSB data inserter can be used directly in combination with a transmitter without multiplexer for a DAB-based data broadcasting system, e.g. for inhouse coverage or mobile services.

The ETI player option is also of interest for:

- ◆ testing of receivers
- ◆ checking of receiver installations, particularly in vehicles
- ◆ lab testing of new DAB services
- ◆ field testing of DAB transmitters via test signals

All R&S DSIP020 options can be activated independently of each other. The data inserter can be software-converted at any time from a test unit (ETI player) into an operational device (IP inserter). Subsequent expansion of existing DAB systems is no problem.

The R&S DSIP020 complements the datacasting solutions from Rohde & Schwarz, which can be used system-independently based on open interfaces both for DVB and DAB systems.

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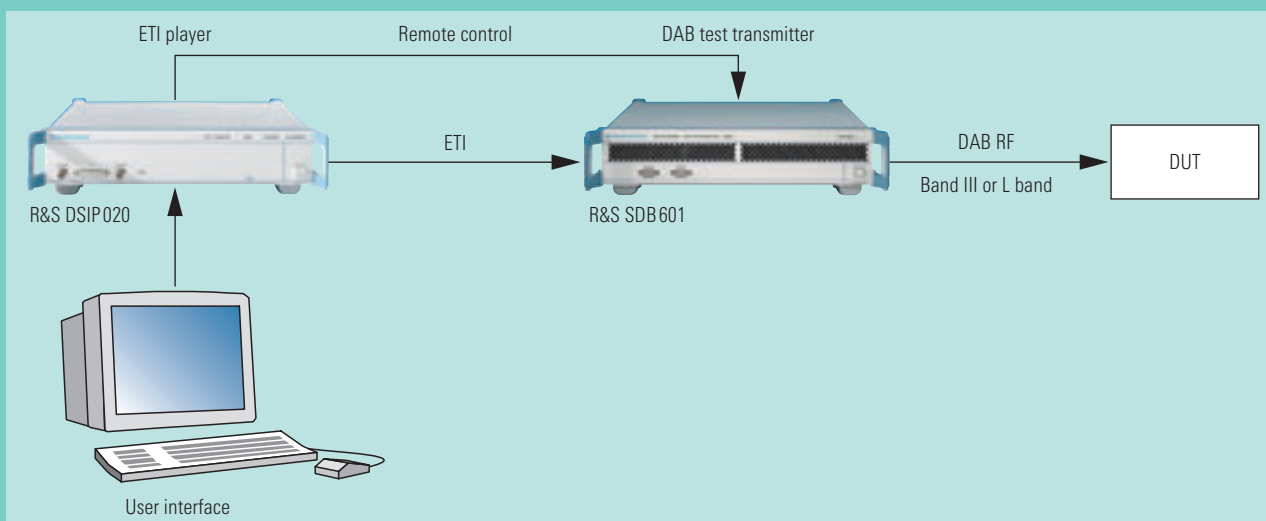


FIG 3 DAB simulation with R&S DSIP020 and DAB Test Transmitter R&S SDB601.