

# **Application Note - ASTRA 19,2E DVB-I service Lists for German FTA services**

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## 1 Introduction

### 1.1 Context

DVB-I is a new standard developed within the DVB standardization organization which allows to create service lists in XML format. It features (including not limited)

- ▲ Simulcast of services between HD and SD
- ▲ Inclusion of IP services
- ▲ Regionalization of services
- ▲ Service list tailoring depending on subscription package
- ▲ Sat> IP tuning parameters
- ▲ Inclusion of service logos

More information can be found on [1] and [2].

In the context of satellite reception, the provided DVB-I services list can be used:

- ▲ For installation and maintenance of service lists for DVB IRDs supporting the format
- ▲ For ordering service of an existing service scan result
- ▲ By SAT>IP clients to construct a service list
- ▲ By SAT>IP servers to expose a service list for SAT>IP clients

### 1.2 Scope

The present document aims to describe the current experimental SES concept for the implementation of DVB-I service lists for Germany's Free to Air services distributed from ASTRA 19,2 degrees East position.

The intent is to ease their use for developers and end devices and encourage interoperability.

It is planned to enrich the service list progressively with additional features.

### 1.3 Disclaimer

DVB-I service lists are experimental, provided "as is" and will be subject to revisions. SES cannot be held responsible for any loss or damage incurred by any issue related to the DVB-I service lists.

Please provide feedback at: [dvb-i@ses.com](mailto:dvb-i@ses.com)

## 1.4 Version History

13/11/2019	Document created	J.OU.
07/01/2020	Update of the document	J.OU.
14/01/2020	Changed LCN blocks for radio services	J.OU.
01/04/2020	<ul style="list-style-type: none"> <li>- Changed LCN Blocks to better “mirror” the tv services block</li> <li>- Added regionalization for SAT.1 and RTL</li> <li>- Added regionalization for locale commercial services</li> <li>- Added test dash streams</li> <li>- Outlook to logos</li> <li>- Added further explanation to regions</li> <li>- Added an Annex for using the chansort reference lists</li> <li>- Added some words on logos and DASH instances</li> </ul>	J.OU

## 1.5 References

- [1] Digital Video Broadcasting (DVB) ; Service Discovery and Programme Metadata for DVB-I Services, DVB Bluebook A177 [https://www.dvb.org/resources/public/standards/a177\\_dvb-i\\_specification.pdf](https://www.dvb.org/resources/public/standards/a177_dvb-i_specification.pdf) , Geneva 11/2019
- [2] <https://dvb.org/news/webinar/dvb-i-service-discovery-and-programme-metadata-december-2019/>

## 1.6 Abbreviations

DVB:	Digital Video Broadcasting
FTA:	Free To Air
HEVC	High Efficiency Video Coding
IDTV:	Integrated Decoder Television
IRD:	Integrated Receiver Decoder
LCD:	Logical Channel Descriptor
LCN:	Logical Channel Number
MPEG:	Moving Pictures Expert Group
RCN	Receiver Channel Number
SDT:	Service Description Table
SI:	Service Information
SID:	Service ID
STB:	Set Top Box

Experimental

## 2 General Concept

### 2.1 Overview of features

The current version of DVB-I services lists features:

- ▲ 25 regionalized service lists and 1 national list for the Free To Air services of ASTRA 19,2East
- ▲ LCNs according to the service genre including radio services
- ▲ Simulcast of SD and HD FTA instances of the same services

The DVB-I service list is automatically generated by using up to date scanning and applying all the LCN rules as set out in this document.

Together with the DVB-I service list, 54 reference list are generated automatically to sort services on legacy devices (see Annex A). The PDF service lists are packed into two zip files for HD and UHD respectively. Each of them carries a timestamp to identify whether an update is available

They can be found at: <http://www.satip.info/resources?tid=23>

For the viewer orientation, 54 PDF service lists are also provided, so they can be printed out. The reference lists are packed into two zip files for HD and UHD respectively. Each of them carries a timestamp to identify whether an update is available

They can be found at: <http://www.satip.info/resources?tid=23>

### 2.2 Start LCN for Service List

Each service list start with 101, leaving the manufacturer range 1 – 99 untouched. It is a manufacturer's decision to shift all services by 100 to obtain a list starting with 1.

### 2.3 Regionalization

The current service list covers ASTRA 19.2 East Free to Air reception. It offers 26 regionalized service lists corresponding to the 25 regional variants of public broadcast services distributed over ASTRA 19.2 East. These are:

- ▲ Aachen
- ▲ Baden Wuerttemberg
- ▲ Bayern Nord
- ▲ Bayern Sued
- ▲ Berlin
- ▲ Bielefeld

- ▲ Bonn
- ▲ Brandenburg
- ▲ Duesseldorf
- ▲ Duisburg
- ▲ Essen
- ▲ Hamburg
- ▲ Hessen
- ▲ Köln
- ▲ Mecklenburg-Vorpommern
- ▲ Muenster
- ▲ Niedersachsen
- ▲ Rheinland-Pfalz
- ▲ Saarland
- ▲ Sachsen
- ▲ Sachsen-Anhalt
- ▲ Schleswig-Holstein
- ▲ Siegen
- ▲ Thüringen
- ▲ Wuppertal

Additionally, a national service list is available:

- ▲ Deutschland

For the 26 regions,

- the corresponding regionalized service will be placed at 103. The remaining services (regionalized variants of services) will be placed in the range for regional services starting from 151
- The regional variant of RTL and SAT.1 are placed respectively on 104 and 105 if they exist. If no corresponding regional variant exists, the national variant is placed at 104 and 105. Other regional variants (or national variant) are placed in the LCN block starting at 381.
- The local commercial services corresponding to the region are placed in the LCN block starting at 351 (if any). If no corresponding local commercial service exists, the service "local-tv-portal" is placed, which corresponds to a national portal to local services in Germany. All remaining local commercial services are placed in the LCN block starting at 361.

For the national list,

- the general services (“Vollprogramme”) are placed just after the national Public Services and their start LCN is 103.
- All regional public broadcast services are placed in the range starting with 151.
- “Lokal-TV-Portal” is placed at 351
- All regional variants of RTL and SAT.1 are placed in the LCN block starting at 381
- All local commercial services (except “local-TV-Portal”) are placed in the LCN block starting with 361

## 2.4 Structure of the service list - Service Genres

The service list is constructed according to genres which are mapped to different LCN ranges. Each Service is assigned a genre. These service genres are only used to structure the service list and explain the LCN order. There is currently no service genre signalled in the DVB-I service list

Table 1 shows the current genres defined with their respective LCNs:

**Table 1: Services Genres and their respective Start LCN for regionalized lists**

Start LCN	Description	Label (in German)
101	PSB 1 and 2	Oeffentlich-rechtlich 1 und 2
103	Regional service according to chosen region	Oeffentlich-rechtlich regional (chosen region)
104	General Services including appropriate variant of RTL and SAT.1	Vollprogramme
151	Public Regional Programmes (except chosen region)	Oeffentlich-rechtlich regional (except chosen region)
201	Information & Documentary	Info und Doku
251	Kids	Kinder
301	Sports	Sport
351	Local private services	Lokal privat
361	Remaining local services	Local privat
381	Remaining regional variants of RTL and SAT.1	Andere Regionalfenster von RTL und SAT.1
401	Music	Musik
451	Marketplace	Marktplatz
501	Faith	Glaube
511	Others	Sonstige



<b>551</b>	Austrian Services	Oesterreich
<b>601</b>	Swiss Services	Schweiz
<b>651</b>	Services in English	Englisch
<b>701</b>	Services in French	Franzoesisch
<b>751</b>	Services in Spanish	Spanisch
<b>801</b>	Services in Russian	Russisch
<b>851</b>	Services in Arab	Arabisch
<b>901</b>	Services in other Languages	Sonstige Fremdsprachen
<b>951</b>	UHD	UHD
<b>1151</b>	Radio Locale	Radio local
<b>1201</b>	Radio Info & culture	Radio Info und Kultur
<b>1351</b>	Radio classic	Radio Klassik
<b>1401</b>	Radio Pop & Rock	Radio Pop und Rock
<b>1471</b>	Radio Schlager	Radio Schlager
<b>1501</b>	Radio Faith	Radio Glaube
<b>1531</b>	Radio Other	Radio Sonstige
<b>1551</b>	Radio Austria	Radio Oesterreich
<b>1651</b>	Radio Services in English	Radio Englisch
<b>1701</b>	Radio Services in French	Radio Franzoesisch
<b>1751</b>	Radio Services in Spanish and Catalan	Radio Spanisch und Catalanisch
<b>1901</b>	Radio Services in Other languages	Radio Sonstige Fremdsprachen

For the national services, the different ranges applicable are shown in Table 2. They differ only in the start LCN for the General services and the omission of the regional public service at LCN 103, the national variant of SAT.1 and RTL, and the local-TV-Portal at LCN 351.

**Table 2: Services Genres and their respective Start LCN for the national list**

<b>Start LCN</b>	<b>Description</b>	<b>Label (in German)</b>
<b>101</b>	PSB 1 and 2	Oeffentlich-rechtlich 1 und 2
<b>103</b>	General Programmes	Vollprogramme
<b>151</b>	Public Regional Programmes	Oeffentlich-rechtlich regional
<b>201</b>	Information & Documentary	Info und Doku

<b>251</b>	Kids	Kinder
<b>301</b>	Sports	Sport
<b>351</b>	Lokal-TV-Portal	Lokal-TV-Portal
<b>361</b>	local commercial services	Lokal privat
<b>381</b>	Regional variants of commercial services	Regionalfenster von Privaten
<b>401</b>	Music	Musik
<b>451</b>	Marketplace	Marktplatz
<b>501</b>	Faith	Glaube
<b>511</b>	Others	Sonstige
<b>551</b>	Austrian Services	Oesterreich
<b>601</b>	Swiss Services	Schweiz
<b>651</b>	Services in English	Englisch
<b>701</b>	Services in French	Franzoesisch
<b>751</b>	Services in Spanish	Spanisch
<b>801</b>	Services in Russian	Russisch
<b>851</b>	Services in Arab	Arabisch
<b>901</b>	Services in other Languages	Sonstige Fremdsprachen
<b>951</b>	UHD	UHD
<b>1151</b>	Radio Locale	Radio local
<b>1201</b>	Radio Info & culture	Radio Info und Kultur
<b>1351</b>	Radio classic	Radio Klassik
<b>1401</b>	Radio Pop & Rock	Radio Pop und Rock
<b>1471</b>	Radio Schlager	Radio Schlager
<b>1501</b>	Radio Faith	Radio Glaube
<b>1531</b>	Radio Other	Radio Sonstige
<b>1551</b>	Radio Austria	Radio Oesterreich
<b>1651</b>	Radio Services in English	Radio Englisch
<b>1701</b>	Radio Services in French	Radio Franzoesisch
<b>1751</b>	Radio Services in Spanish and Catalan	Radio Spanisch und Catalanisch
<b>1901</b>	Radio Services in Other languages	Radio Sonstige Fremdsprachen

## 2.5 LCN order within a genre

Within a genre of programs, the LCN are calculated automatically by using a starting LCNs for each genre of programs:

- ▲ For „Vollprogramme“, „Info und Doku“, „Sport“, „Kinder“, „Musik“:
  - Priority 1 - Market share Germany for 2019
  - Priority 2 - Alphanumeric order
- ▲ For UHD
  - Priority 1 are real programmes (not trailer/ trials)
- ▲ For all others:
  - Alphanumeric order

## 2.6 Simulcast and Instances of a same service

For this version of the DVB -I services list, two instances of services are considered as two instances of the same service if they are identical 7 days a week and 24 hours a day. Thus, Instances of a services in a 24/7 simulcast are considered in the DVB-I service list as several instances of the same services. Conversely, if a simulcast occurs only for some events (e.g. simulcast is transmitting only for some events while the SD programming is running 24/7), these instances are not considered as instances from the same service. In this case, they are considered as separate services with a separate LCN.

Instance of the same services help the devices to select the instance with the highest quality by using the priority field in the service instance element.

In this version of the DVB-I service list:

- ▲ In the case of HD and SD simulcast, two service instances of a same service are used for HD (Priority 2) and SD (Priority 3)
- ▲ In the case of UHD, HD and SD simulcast, three service instances of a same service are used for UHD (Priority 1), HD (Priority 2) and SD (Priority 3)
- ▲ In the case of DASH, HD and SD simulcast, three service instances of a same service are used for HD (Priority 2) and SD (Priority 3), DASH (Priority 4)
- ▲ In the case of DASH, UHD, HD and SD simulcast, four service instances of a same service are used for UHD (Priority 1), HD (Priority 2) and SD (Priority 3), DASH (Priority 4)
- ▲ Only FTA instances are considered

The following options with respect to service instances with lower priority are an implementation decision:

- ▲ discard lower priority instances,
- ▲ to offer a menu presented to the viewer

- ▲ place the lower priority instances in higher number range (e.g. “non-honoured” range).
- ▲ store the lower priority instances for timeframes where the highest priority instance signal is insufficient

## 2.7 Tuning Parameters

DVB-I services lists can be used to construct a complete services list without the need for a service scan.

The provided DVB-I service list includes:

- ▲ Orbital position
- ▲ Frequency
- ▲ Polarization
- ▲ Service id
- ▲ Transport Stream id
- ▲ Original network id

Tuning parameters can be found in the QueryParameters in the SATIPDeliveryParameters element:

- ▲ Symbol rate
- ▲ Roll off factor
- ▲ FEC
- ▲ Pilots on
- ▲ Modulation order
- ▲ System

## 2.8 SAT>IP

The provide DVB-I service list can be used by SAT>IP client by constructing the rtsp command with the help of the Queryparameters of the SATIPDeliveryParameters element

For example, the following element in the DVB-I service list can be used by appending the prefix: “rtsp://sat.ip/?src=1&” where sat.ip is the local address of the SAT>IP server.

```
<SATIPDeliveryParameters>  
  <QueryParameters>  
    freq=11836&pol=h&ro=0.35&msys=dvbs&mtype=8psk&plts=off&sr=27500&fec=34&pid  
    s=0,17,18,100,101,102,104  
  </QueryParameters>
```

```
</SATIPDeliveryParameters>
```

The resulting rtsp command is:

```
rtsp://sat.ip/?src=1&freq=11836&pol=h&ro=0.35&msys=dvbs&mtype=8psk&plts=off&sr=27500&fec=34&pids=0,17,18,100,101,102,104
```

## 2.9 DASH

Some MPEG-DASH instances are now included as trial. They are all declared with Priority 4.

## 2.10 Regions

The 26 regions are currently defined using postcodes or postcode ranges

Germany is a superset of all regions. Typically, on a receiver could ask the user to enter his postcode before selecting the correct regional list. Berlin is defined as a subregion of Brandenburg.

Figure 1 details the region hierarchy.

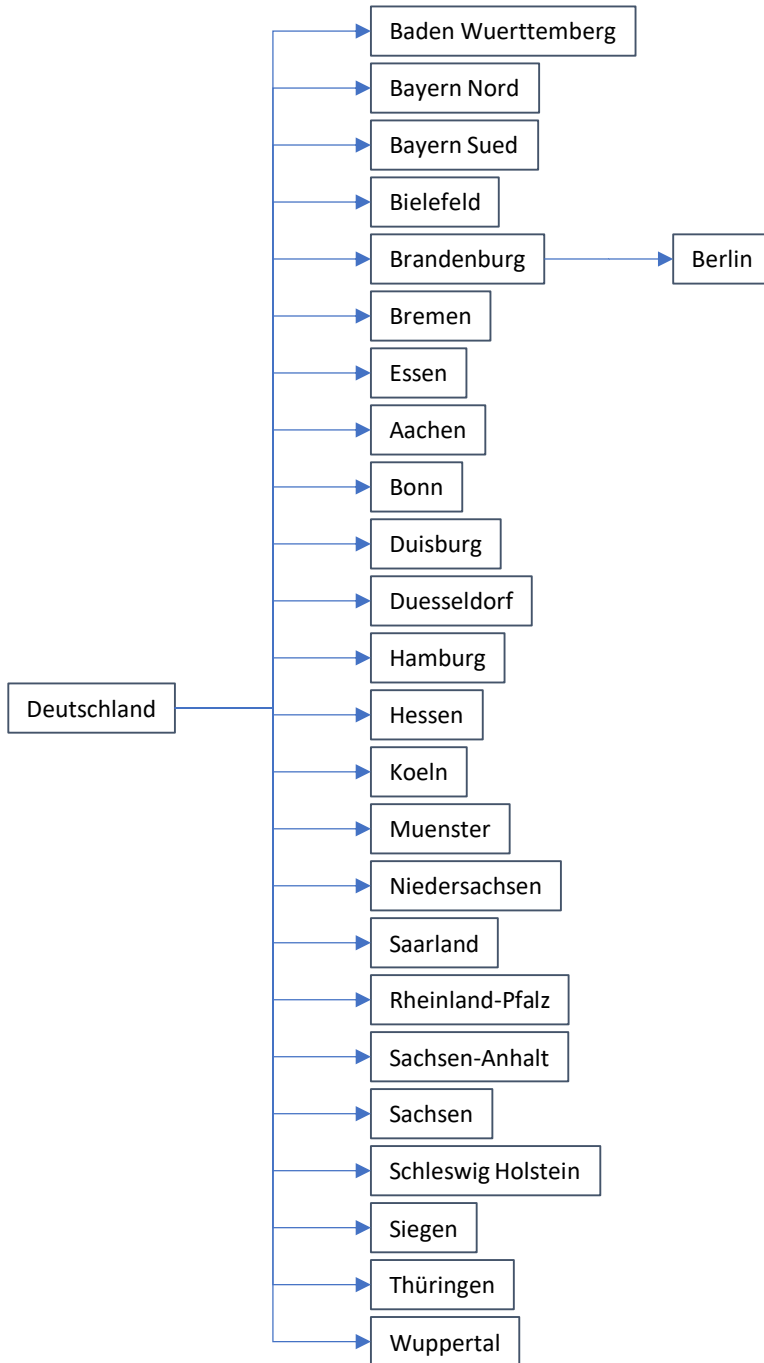


Figure 1 Regions Hierarchy

## 2.11 Service Logos

Service logos will be progressively added when available.

## **Annex 1 – Sorting your legacy TV's service list with Chansort**

As DVB-I is a new standard, legacy devices cannot enjoy the updated service. Therefore, reference lists are published to reorder automatically services on a legacy device according to the proposed LCNs. Chansort is a service editor which works with many devices. More information can be found on <https://github.com/PredatH0r/ChanSort>

Compared to DVB-I,

- no tuning parameters can be provided, so that the reference list is only used for sorting services. Services must be present on the service list.
- No simulcast can be signalled. Therefore, only HD instances is used if HD instances are FTA. Since UHD can only be decoded by UHD TVs, two groups of reference lists are created an HD and UHD group. Two respective zip files are available for download.
- No region selection is possible. Therefore, 27 reference lists are made available in each zip file corresponding to each region and a national service list.

The following steps should be followed:

1. Download the reference lists (either HD or UHD depending on your device's capabilities)
2. Extract the respective zip file to a folder
3. Run a complete scan on your set top box or TV
4. Download the service list on a usb stick from your device (check corresponding menu on your device)
5. Download chansort and install it
6. Open the downloaded list from your TV or set top box with Chansort
7. In the chansort menu select "apply a reference list"
8. Select the reference list from your downloaded folder corresponding to your preferred region
9. You can now apply the reference list and optionally change the start number to 1
10. Save the service list of your legacy devices to your usb stick
11. Import the service list from usb stick on your legacy device by selecting corresponding menu on your legacy device
12. Download the PDF service list and print the selected if you wish
13. Enjoy a sorted Service List!

More detailed instructions can be found on <https://github.com/PredatH0r/ChanSort>