

NAME

IsdbS3Mux - create a multiplexed ISDB-S3 file

SYNOPSIS

IsdbS3Mux **-p** params [**-v**] [**-b**] [**-x**] [**-e**] **-o** outfile infile1 infile2...

DESCRIPTION

IsdbS3Mux is a tool to convert one or more transport-stream files into a valid ISDB-S3 PCAP TLV stream. The resulting stream can be used for ISDB-S3 modulation using the DekTec StreamXpress player.

OPTIONS

The following options are supported:

-p param1=val1,param2=val2...

Specifies the modulation parameters in a comma-separated parameter-value list. See the PARAMETERS section for a list of supported parameters and their values.

-v Sets verbose mode.

-b Displays the computed transport-stream bitrate of the input files.

-x Re-multiplexes the input files to the computed transport-stream bitrates.

-e Outputs pcap-file with Ethernet link-type; otherwise pcap-file with raw-IP link-type.

-o outfile Sets the output filename.

Infile[j] Name of the *j*-th input file to be multiplexed. The input stream type can be transport-stream or TLV-stream. In case of transport-stream input, the file shall contain 188-byte packets. The bitrate of the input file is constrained by the modulation type, code rate and number of slots used. Using the **-b** option shows the computed transport-stream bitrates based on the given modulation parameters. Using the **-x** option re-multiplexes the input files to the computed transport-stream bitrates. In case of TLV-stream input, the input shall be a PCAP file containing UDP packets. The payload of each UDP packet shall contain one TLV packet including its header. The IsdbS3Mux generates padding according to the PCAP timestamps.

PARAMETERS

The following modulation parameters are recognized for the **-p** option:

tmode[i] Modulation parameters for hierarchy layer *i* (*i*<8). A maximum of 8 layers with different modulation parameters can be defined.

mod *bpsk* | *qpsk* | *8psk* | *16apsk* | *32apsk*
Modulation type for this layer.

cod *1/3* | *2/5* | *1/2* | *3/5* | *2/3* | *3/4* | *7/9*
| *4/5* | *5/6* | *7/8* | *9/10*
Code rate for this layer.

slot_count 5..120
 The number of slots per frame used for this hierarchical layer (a multiple of 5 slots). The total number of slots per frame is 120, so the sum of all slot_count must be 120.

back_off 0..255
 The power level of this hierarchical layer below the output level in 1/10 dB units.

relstream[j] Specifies the mapping between the input stream file(s) and the available slots.

stream_type 1 (Transport-stream) | 2 (Single-TLV stream)
 Input stream type.

slot_count 1..120
 The number of slots that are used for the transmission (including dummy slots). The slot count is described in the section SLOT COUNT.

tsid 0..65535
 Transport-stream identifier (TSID) for this transport stream.

SLOT COUNT

Each frame contains 120 slots. Each layer contains a multiple of 5 slots. This number of slots is given in the "tmode" array. The sum of the number of slots in "tmode" should be 120.

Depending on the constellation, only "k*n" slots among the "5*n" are really used for the transport-stream transmission (the other slots are dummy slots).

The table below shows the usable slots for each constellation.

Constellation	Slot count multiple of	Useable slots for transmission (k)
BPSK	5	1 of 5 slots
QPSK	5	2 of 5 slots
8PSK	5	3 of 5 slots
16APSK	5	4 of 5 slots
32APSK	5	5 of 5 slots

EXAMPLE

```
IsdbS3Mux -v -x -p "tmode[0]={mod:8psk,cod:3/4,slot_count:120,back_off:0},
relstream[0]={stream_type:2,slot_count:120,tsid:0x0001}"
-o out.pcap fileA.pcap
```

Create an ISDB-S3 multiplex with 1 hierarchical layer:

Layer 0: 8PSK, code rate 3/4, uses 120 slots (72 8PSK + 48 dummy)

One TLV stream input files is used:

fileA.pcap ID=0x0001; Uses 120 slots (Layer 0)

```
IsdbS3Mux -v -x -p "tmode[0]={mod:bpsk,cod:1/3,slot_count:20,back_off:0},
tmode[1]={mod:qpsk,cod:2/5,slot_count:20,back_off:0},
tmode[2]={mod:8psk,cod:1/2,slot_count:20,back_off:0},
tmode[3]={mod:16apsk,cod:3/5,slot_count:20,back_off:10},
tmode[4]={mod:32apsk,cod:9/10,slot_count:40,back_off:10},
relstream[0]={stream_type:1,slot_count:80,tsid:0x40F1},
relstream[1]={stream_type:1,slot_count:40,tsid:0x40F2}"
-o out.pcap fileA.ts fileB.ts
```

Create an ISDB-S3 multiplex with 5 hierarchical layers:

```
Layer 0:   BSK, code rate 1/3, uses 20 slots (4 QPSK + 16 dummy)
Layer 1:   QSK, code rate 2/5, uses 20 slots (8 BPSK + 12 dummy)
Layer 2:   8PSK, code rate 1/2, uses 20 slots (12 8PSK + 8 dummy)
Layer 3:   16APSK, code rate 3/5, uses 20 slots (16 16APSK + 4 dummy)
Layer 4:   32APSK, code rate 9/10, uses 40 slots (40 32APSK + 0 dummy)
```

Two transport-stream files are used:

```
fileA.ts   ID=0x40F1; Uses 80 slots (Layer 0, 1, 2 and 3)
fileB.ts   ID=0x40F2; Uses 40 slots (Layer 4)
```

LICENSE

A valid ISDB-S3 license installed on a DekTec modulator card is required to run IsdbS3Mux.