

# Frame Compatible 3D Stereoscopic Broadcasting

## Transmission Format Specification and Minimum Device Requirements

Version 1.2

### Introduction

This document describes the Frame Compatible 3D Transmission Formats available on ASTRA and the STB and Display Device Requirements that should allow basic interoperability.

## 3D Transmission Format

### Image Multiplex

The following two Frame Compatible 3D Image Multiplexing schemes can be used on the SES ASTRA satellite system:

- **Side-by-Side (Anamorphic/Half) 1080i25**
  - 1920x1080 HD pixel frame containing two horizontally squeezed 960x1080 pixel images.
  - Horizontal Subsampling
  - Left Frame First
  
- **Top-and-Bottom 720P50**
  - 1280x720 pixel frame containing two vertically squeezed 1280x360 pixel images.
  - Vertical Subsampling
  - Left Frame Top

Please note:

- Both formats are backwards compatible with current generation HD Set-Top-Boxes
- Both formats are part of the HDMI 1.4a mandatory broadcast formats

### Video Coding

The minimum video specification for Frame compatible 3D transmissions shall be H.264 Main Profile at Level 4.0 according to ETSI TS101154

### Audio Coding

3D transmissions shall be accompanied with an AC-3 Audio stream according to ETSI TS101154

### Signalling

Free-To-Air 3D events/services shall be signalled in over-the-air broadcasts using DVB defined mechanisms\*. A receiver may use this signalling for

- sourcing HDMI signalling from the transmission
- informing the viewer about 2D-3D simulcasts
- ....

## 3D Set-Top-Box: Minimum Requirements

- **3D Video Format Support**

A 3D capable STB needs to support at least one of the two image multiplex formats above. FTA 3D capable STBs shall support both formats.

- **HDMI Requirements:**

- **HDMI Version: Any**

- **HDMI 1.4a Signalling**

A 3D capable STB may implement any version of HDMI as long as the signalling part of HDMI 1.4a is retrofitted to the STB. A 3D capable STB shall indicate the current 3D format using HDMI 1.4a defined signalling (HDMI AVI Infoframe, HDMI Vendor Specific Infoframe,...). This allows a display to correctly switch between 2D and 3D input modes and setup the corresponding processing functions.

- **DVB Signalling**

3D compatible STBs shall be capable of parsing DVB defined signalling\*

## 3D Ready Display Device: Minimum Requirements

### HDMI Version 1.4a

3D ready displays shall fully implement the HDMI 1.4a specification including all mandatory broadcast formats. HDMI Version 1.4a displays shall be capable of handling HDMI 1.4a signalling of 3D broadcast formats from 3D capable sources with HDMI version <1.4

### Manual Image Multiplex Format Switching

All 3D ready displays shall provide the option of manually switching the 3D image multiplex format in order to guarantee backwards compatibility with standard HD STBs that cannot be upgraded to HDMI 1.4a Signalling

\*DVB work in progress