



HP Scitex FB550 and FB750 Printers

Tips for improving printing quality

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Introduction

The following guide is intended to assist **FB550/FB750 operators** in troubleshooting and mitigating common types of instances of horizontal banding (HB).

Much of the material is already reviewed in other published documents. Refer to the following documents for more in depth instructions:

- [HP Scitex FB550 and FB750 Printers – Site Preparation Guide](#)
- [HP Scitex FB550 and FB750 Printers - User's Guide](#)
- [HP Scitex FB550 and FB750 Printers - Rigid Media Guide](#)
- [HP Scitex FB5x0/7x0 Printers - Equivalent FB500-700 & FB550-750 Print Modes](#)
- [HP Scitex FB550 and FB750 Printers - Cleaning Instructions](#)

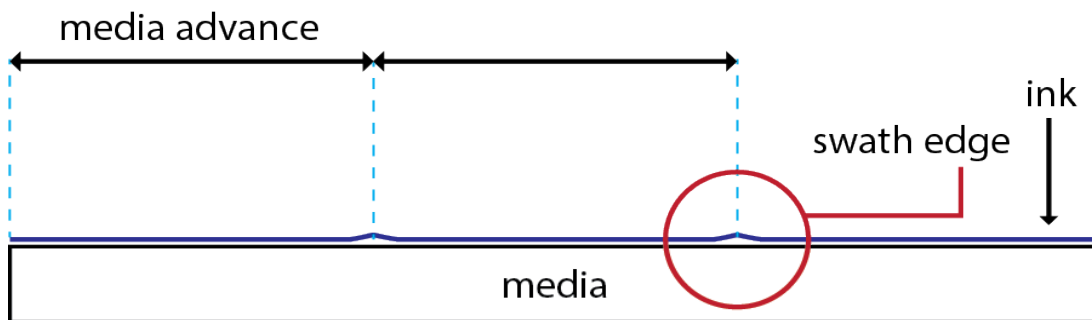
I. Main contributors to Horizontal Banding

There are two primary contributors to unacceptable levels of horizontal banding; the first can be classified as **Application Limitations**, the second falls under **Printer Calibrations**. Once all Application Limitations and Printer Calibrations are addressed, an additional **Troubleshooting of subsystems** may be required. Please, call an **HP service personnel or reseller technician** if no improvement in Horizontal Banding is achieved after following this guide.

II. Types of Horizontal Banding

II.1 Swath Edge Horizontal Banding

Swath edge horizontal banding can be identified by a dark edge or “ridge” between media advances where ink appears to build up and shows a visible band which may be objectionable. This type of banding is usually associated with an **Application Limitation**, but could be related to a printer related issue.



* Not to scale

II.2 Media Feed

Media feed horizontal banding describes any type of movement where the media is not fed accurately through the printer. The root causes of this can range from a media that is not flat to problems with the media drive system, tables or media supply and take-up system. This type of horizontal banding will generally require **troubleshooting and correction by a field engineer**.

II.3 Steering

Similar to media feed horizontal banding, this describes media that is not fed accurately through the printer, but in this case, the movement of the material varies or is inconsistent from one side of the material to the other. Normally, this is related to **alignment pins, media type, short media, setup of tables or Roll to Roll** system.

II.4 Jet Dropout

This type of banding is associated with the **Ink Delivery System (IDS)**, where a jet or complete section of jets drops out. The IDS is comprised of everything from the ink cartridge to the printhead including the Vacuum pressure system which assists in servicing the heads and holds proper vacuum meniscus.

II.5 Missing Jets

Missing Jets describes a jet that is not firing because of a blocked or incorrectly operating nozzle and is not associated with Jet Dropout. **Proper cleaning and maintenance, and avoiding head strikes or head rubs** is recommended to prevent this failure.

Refer to the [HP Scitex FB550 and FB750 Printers - Cleaning Instructions](#) for specific guidelines.

III. Application Limitations

The following items all interact with one another and should be considered when troubleshooting or when preparing a new job. These are items both customers and operators should be aware of as they apply to everyday operation of the printer and preparation of job files.

It is recommended to run test prints before the customer commits to and runs large jobs.

III.1 Media

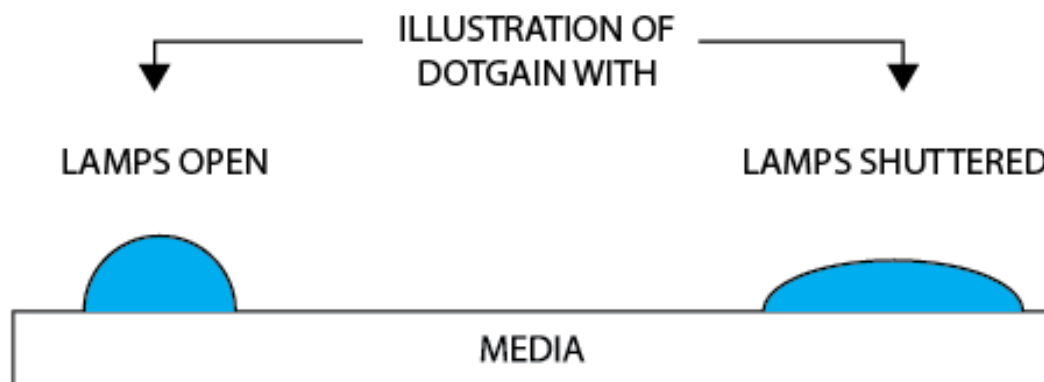
Due to the broad range of surfaces UV printers can print on, a large range of results can occur. Different media types can have different properties, however, generally speaking, media types can be divided into two basic categories: paper and plastic. Paper materials are, in general, those produced from wood based materials, such as Foam Board or UV Photobase. Plastics, or synthetics, are normally petroleum based, for example Foam PVC or Scrim Banner Vinyl. Horizontal banding can occur with both types, but **plastic/synthetic media types are more prone to horizontal banding, which can be classified as an application limitation.**

Usually, synthetic media types such as Foamed PVC or polystyrene are more prone to swath edge banding because of the surface tension of the media and the interaction with the ink. Synthetic materials are also sensitive to static, especially in dry conditions; proper material preparation and a functional ionizer are important. Different vendors, material thickness, lots, or age of the materials can all be contributors.

Refer to the [HP Scitex FB550 and 750 Printers - Rigid Media Guide](#) for specific guidelines.

III.2 Lamp Shutter Settings

Considering media type selection along with the **correct lamp shutter settings and media profile can have an effect on swath edge banding.** The FB5x0 and FB7x0 printers have two trailing lamp settings, open and shuttered. An open setting leaves the trailing lamp aperture open, this will 'pin' ink drops to the media resulting in a more matte finish. Alternatively, the shuttered setting will allow the trailing lamp aperture to stay closed resulting in a glossier finish. However, shuttered trailing lamps can contribute to swath edge banding depending on the media type and print mode. The leading lamp is always open to ensure adequate curing.



TIP: Using a shuttered lamp setting can also reduce curing and adhesion.

The default Media Wizard has predefined settings for the standard media types. **Preferably, use these settings before creating custom wizard types.**

III.3 RIP Color Profiles

In contrast to Thermal Ink Jet (TIJ), solvent or Latex printing technologies, UV inks have more to do with the lamp settings and the media white point rather than the dot gain associated with these other technologies. **Ink limits and ink restrictions are primary considerations when profiling** to ensure an adequate level of ink adhesion and an acceptable level of IQ regarding both horizontal and vertical

banding while still achieving a good color gamut and accurate reproductions.

This also means that a profile for Foam Board, for example, can be applied to UV Photobase without the need to do any color corrections or linearization, again considering lamp settings and media white point.

III.3.1 Emulation Print Modes (Photo and Photo Plus)

The standard FB550/750 Photo and Photo Plus print modes are printing at 1200 x 600 dpi while in the older FB500/700 series they printed at 600 x 600 dpi. Higher printing resolution is enlarging the printing color gamut, but as a consequence, the usage of more ink in these Photo print modes can result in having more horizontal banding than was characteristic of the old series.

Emulation print modes are available in Photo and Photo Plus Print Modes and they are virtually printing at 600 dpi. As a result, they allow the FB550/750 to emulate the IQ achieved with the Photo Print Modes available with the old FB500/700 series.

Emulation print modes are available in the recommended software RIP's for FB5x0/7x0 Printers: Onyx Thrive and Caldera Grand RIP.

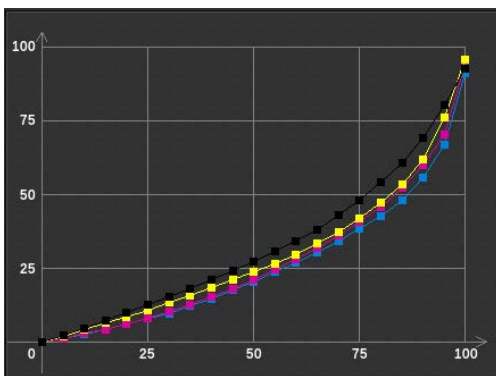
In order to use the Emulation Profiles, follow the instructions specified in [HP Scitex FB5x0/7x0 Printers - Equivalent FB500-700 & FB550-750 Print Modes.](#)

III.3.2 Caldera RIP

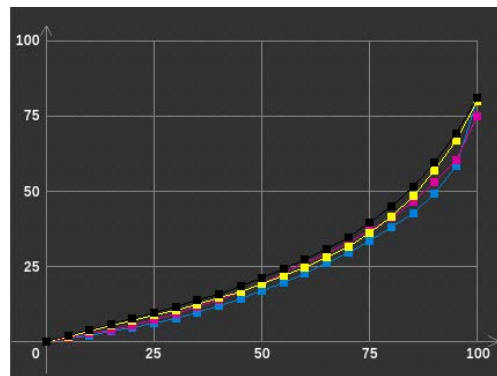
Profiles provided with drivers for the FB5x0 and FB7x0 have saturated colors and a large color gamut. To achieve these results, an increased ink saturation was necessary and this can contribute to swath edge banding.

FB500/700: Ink saver profiles are available from Caldera in the following print modes: Max DPI, Photo Plus, Photo, Indoor Signage Plus and Indoor Signage- 4C and 6C. They use reduced ink levels and have minimal impact on color gamut:

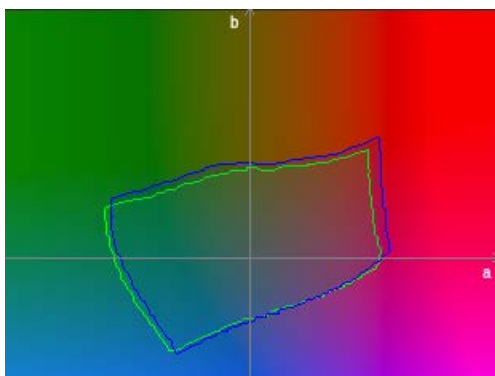
Linearization: standard photo mode CMYKcm



Linearization: ink saver photo mode CMYKcm



Color gamut (L=50). Standard vs Ink saver



— Color gamut: standard photo mode CMYKcm
— Color gamut: ink saver photo mode CMYKcm

Ink saver profiles: available print modes

HP-Scitex-FB500 / Ink Saver - Foam Board		
Mode	Resolution	Quality
CMYK	1200x600	Max DPI - Saturated
CMYKcm	1200x600	Max DPI - Saturated
CMYK	600x600	Indoor Signage Plus
CMYK	600x600	Photo Plus
CMYK	600x600	Indoor Signage
CMYK	600x600	Photo
CMYKcm	600x600	Indoor Signage Plus
CMYKcm	600x600	Photo Plus
CMYKcm	600x600	Indoor Signage
CMYKcm	600x600	Photo

Any user with access to Caldera's Extranet can access these profiles. Before exploring other troubleshooting tasks it is recommended to use these first. Additionally, lower ink saturation also means lower overall ink cost.

FB550/750: Ink saver profiles can be used in the HP FB550/750 printers by cloning them from the HP FB500/700 ink saver profiles. Photo Plus, Photo & Max DPI should not be cloned as they do not directly map into the correct print mode.

III.3.3 Onyx RIP

Default Onyx color profiles generally use low ink levels and ink limits for all media types and ink sets. The **Foam PVC color profile and printer's Foam PVC media** setting uses a low/low lamp setting and is suggested for any media types with swath edge banding.

III.3.4 Custom Profiles

When, or if, custom media profiles are generated and used consider **selecting ink restrictions and limits that are appropriate for the media and lamp settings**. Refer to the RIP software specific documentation on proper profiling methods and additional information or techniques on profiling with UV ink.

III.3.5 Linearization

Using a spectrophotometer to linearize a color profile can reduce ink coverage, **as this process usually decreases the amount of ink in each ink channel**. As a general rule, linearization is suggested to get better color reproduction and more balanced greys.

III.4 Print Modes

Select an appropriate print mode for your application considering viewing distance and matte or glossy finish types in addition to the overall throughput speed.

In general, **slower print modes used to generate higher quality output will use more ink overall and the use of a low/shuttered lamp configuration subsequently can increase the potential for swath edge banding**. The slower throughput and the smaller media advances will give the ink, in most cases, more opportunity to cure but some materials with high surface tension are ultimately prone to swath edge banding. In these cases, **select the Foam PVC profile from Onyx or the 'Ink Saver' profile in Caldera or use the Emulation print mode** and the corresponding printer's media wizard selection to help mitigate these problems.

III.5 Ink Sets

The use of an appropriate ink set for your output or application can impact image quality, in this case, horizontal banding.

As a general rule, CMYKcm ink sets are preferable for applications where the viewing distance is close up, such as POP or image reproduction. Light inks improve mid-tone reproduction and reduce hard dots in areas such as skin tones.

On the other hand, CMYK ink sets are suggested for signage applications with longer viewing distances, especially those with large areas of solid coverage. Reducing the amount of overall ink by not calling for light inks will contribute to a more solid and uniform coverage in those.

IV. Printer Calibrations: User Calibrations

Printer calibrations apply to the overall setup and calibration of the printer and mainly apply to service technicians. However, there are four basic calibrations that can be done by the operator and that can improve the performance of the printer. These calibrations are:

1. **Media Feed Calibration** - Calibrates the media advance accuracy. Visual and (for rigid media only) camera-assisted calibrations are available. For greater accuracy, follow these tips:
 - Record the initial **Media Feed Number** (MFN) before making any changes.
 - Use a lightweight rigid media such as Foam Board with the associated media wizard settings.
 - Perform the calibration process 3 times or more.
 - Use the 900 mm (34 inch) pattern.
2. **Manual BiDi Registration** - Ensures that every working jet fires at precisely the same location (regardless of the direction of carriage travel).
3. **Manual Printhead X Calibration** - Ensures that the printheads are in alignment relative to each other.
4. **Manual Jet Mapping** - Substitutes missing jets for working jets.

Manual calibrations are suggested for more reliable and repeatable results.

Please, refer to the [HP Scitex FB550 and FB750 Printers - User's Guide](#) for a detailed explanation of these four routines.