



# Comparison of GV-5016, GV-3008, GV-4008A and Hikvision DS-4008HF

**Article ID: GV28-12-04-11**

**Release Date: 04/11/2012**

## Contents

Contents .....	1
1. Summary .....	2
2. Specification Comparison .....	3
3. Recording Quality Comparison .....	4
3.1 Noise Deduction Comparison .....	5
3.2 Color Comparison .....	6
3.3 Comparison of High Action Scenes .....	7
4. File Size Comparison .....	9
5. GV-5016 and GV-4008A Features .....	10
6. Conclusion .....	10



## 1. Summary

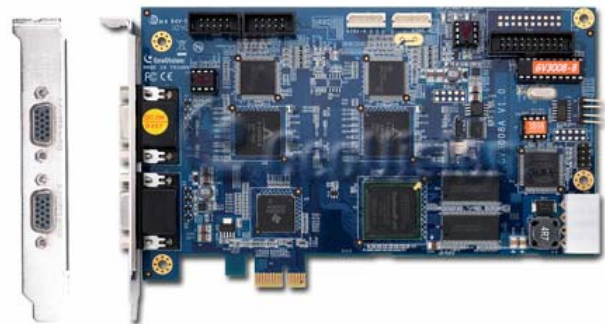
**GV-4008A**, **GV-3008** and the upcoming **GV-5016** are GeoVision video capture cards with H.264 hardware compression. In the market, the **Hikvision DS-4008HF** video capture card has capabilities similar to GV-4008A, GV-3008, and GV-5016. This document provides an overview of features and advantages of GV-4008A, GV-3008 and GV-5016 in comparison to Hikvision DS-4008HF.

**GV-5016** supports up to 16 video and 16 audio channels, recording up to 480 / 400 fps (NTSC / PAL), while **GV-4008A** and **GV-3008** provide up to 8 video and 8 audio channels, recording up to 240 / 200 fps (NTSC/PAL).

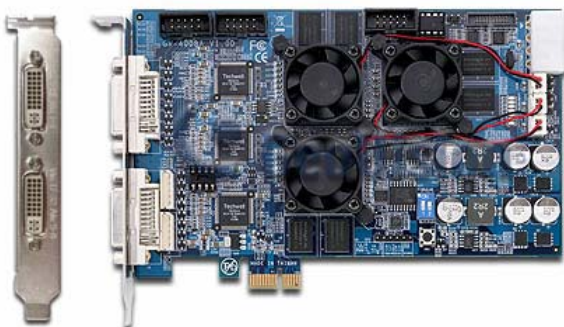
Among these cards, **GV-5016** has a low-profile layout that can fit in smaller system cases. Not only is it small, GV-5016 does not require dedicated power lines or additional cooling which make the low-profile card significantly quieter.



**GV-5016**



**GV-3008**



**GV-4008A**



## 2. Specification Comparison

The video quality depends on the video resolution and the bitrate. Higher bitrate generally means better video quality but bigger file size. As you can see from the following comparison table, **GV-3008 and GV-5016 have the highest bitrate and thus produce the best video images**, followed by GV-4008A and then by Hikvision DS-4008HF. In addition, **GV-4008A and GV-5016 are equipped with hardware de-interlace and hardware de-noise features which lower the CPU loading during quad view playback by about 5-10%.**

Furthermore, GeoVision and Hikvision video capture cards use different encoding methods. Hikvision DS-4008HF uses CBR (Constant Bit Rate) compression whose bitrate remains constant. The image quality varies based on the complexity of the image, leading to lower quality for images with more details and movement. GV-4008A, GV-3008 and GV-5016 use VBR (Variable Bit Rate) compression whose bitrate varies based on the complexity of the images. Simple images use lower bitrate and more complex images use higher bitrate, allowing the possibility of better quality.

Model name		GV-5016	GV-3008	GV-4008A	Hikvision DS-4008HF
Interface		PCI-E 1X	PCI-E 1X	PCI-E 1X	PCI
Dual-Card Support		Yes	Yes	Yes	Yes
Input Type		LFH x 1	DB15 x 2	DVI x 2	DB15 x 2
Video Input		16 Cams	8 Cams	8 Cams	8 Cams
Audio Input		16 Cams	8 Cams	8 Cams	8 Cams
Recording Rate (H/W Compression)	NTSC	480 fps	240 fps	240 fps	240 fps
	PAL	400 fps	200 fps	200 fps	200 fps
DSP overlay		N/A	Yes	N/A	N/A
Display Rate	NTSC	480 fps	240 fps	240 fps	240 fps
	PAL	400 fps	200 fps	200 fps	200 fps
Video Resolution (H/W Compression)	NTSC	704 x 480	704 x 480	704 x 480	704 x 480
	PAL	704 x 576	704 x 576	704 x 576	704 x 576
Compression Format		H.264 VBR	H.264 VBR	H.264 VBR	H.264 CBR
Bitrate Range		5 M ~ 10 M	2.5 M ~ 10 M	2.5 M ~ 5 M	up to 2.5 M
Hardware De-interlace and De-noise		Yes	N/A	Yes	N/A

**Note:** NVIDIA series and Intel Sandy Bridge series chipset motherboards are compatible with **GV-4008A** and **GV-5016** but are not compatible with **GV-3008**.



### 3. Recording Quality Comparison

With the support of higher bitrate and VBR, GV-5016, GV-4008A and GV-3008 do a better job at noise deduction, color appearance and especially high action scenes compared with Hikvision DS-4008HF.

The **Noise Deduction**, **Color** and **High Action Scenes** of the four video capture cards are discussed in detail in the following sections.

Model name	GV-5016	GV-3008	GV-4008A	Hikvision DS-4008HF
Noise Deduction	Good	Excellent	Good	Good
Color	Excellent	Good	Excellent	Good
High Action Scenes	Excellent	Excellent	Good	Fair
VBR Support	Yes	Yes	Yes	No

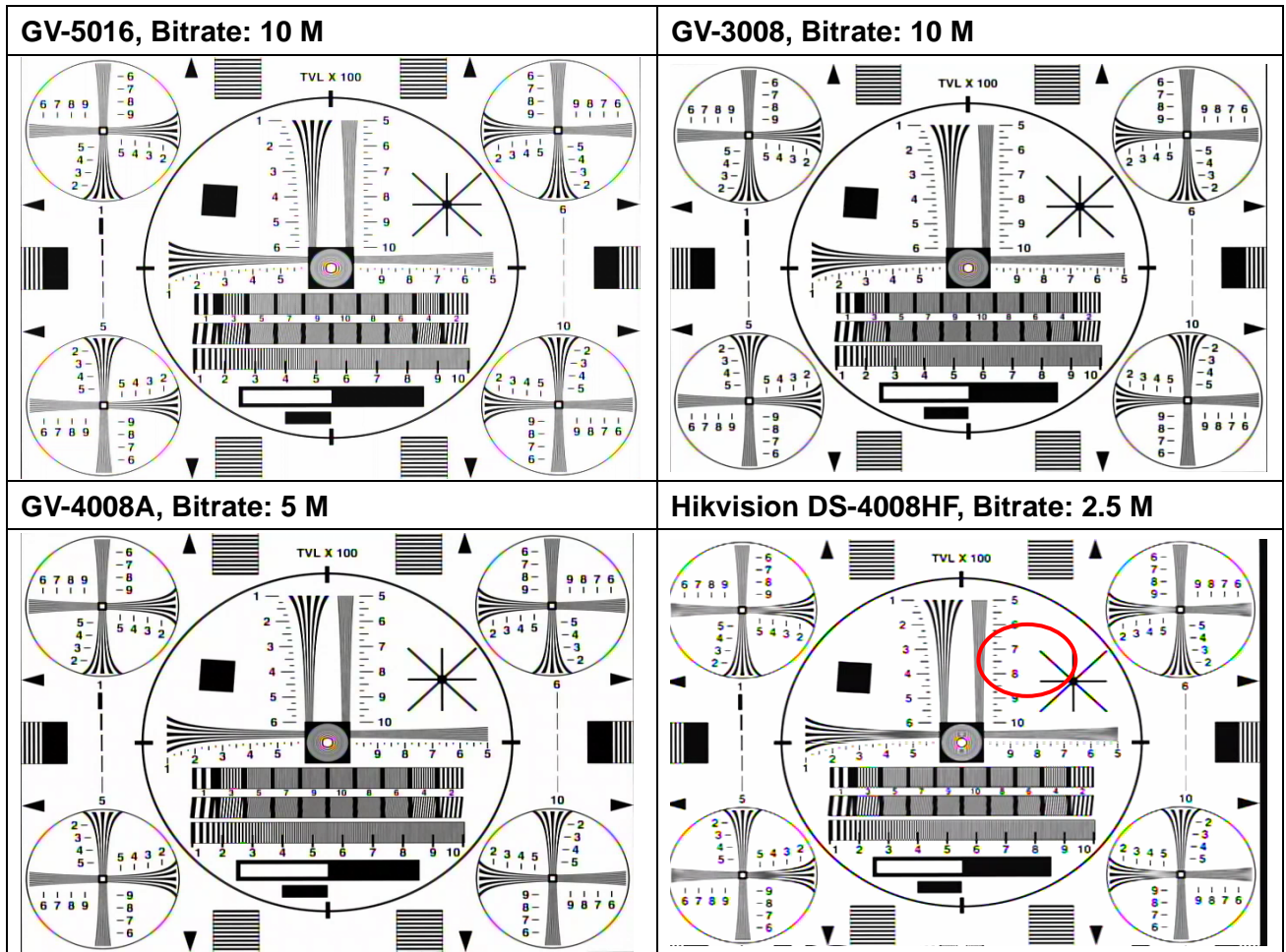
**Note:** The capture cards were tested using the following systems with bitrate set to the maximum bitrate supported by the card:

- GV-5016: tested using GV-System V8.5.4 with bitrate set to 10 M
- GV-3008: tested using GV-System V8.4.0.1 with bitrate set to 10 M
- GV-4008A: tested using GV-System V8.4 with bitrate set to 5 M
- Hikvision DS-4008HF: tested using Skyvision V6.3 with bitrate set to 2.5 M



### 3.1 Noise Deduction Comparison

You can notice a lot of chroma noise on the images of Hikvision DS-4008HF compared to those of GV-5016, GV-3008, and GV-4008. One noise example is highlighted by a red circle on the Hikvision DS-4008HF image.








### 3.2 Color Comparison

You can notice that the GV-5016 and GV-4008A images have **color saturation close to the original image**, while GV-5016 and GV-3008 produce **clearer details**. In comparison, Hikvision DS-4008HF's image looks over-exposed and grainy.

<b>Original Image</b>	
	
<b>GV-5016, Bitrate: 10 M</b>	<b>GV-3008, Bitrate: 10 M</b>
	
<b>GV-4008A, Bitrate: 5 M</b>	<b>Hikvision DS-4008HF, Bitrate: 2.5 M</b>
	



### 3.3 Comparison of High Action Scenes

**Example 1:** In the image of GV-4008A, you can notice the person running is smooth and clear.

The images of GV-3008 and GV-5016 are even clearer because the bitrate reaches 10 M.

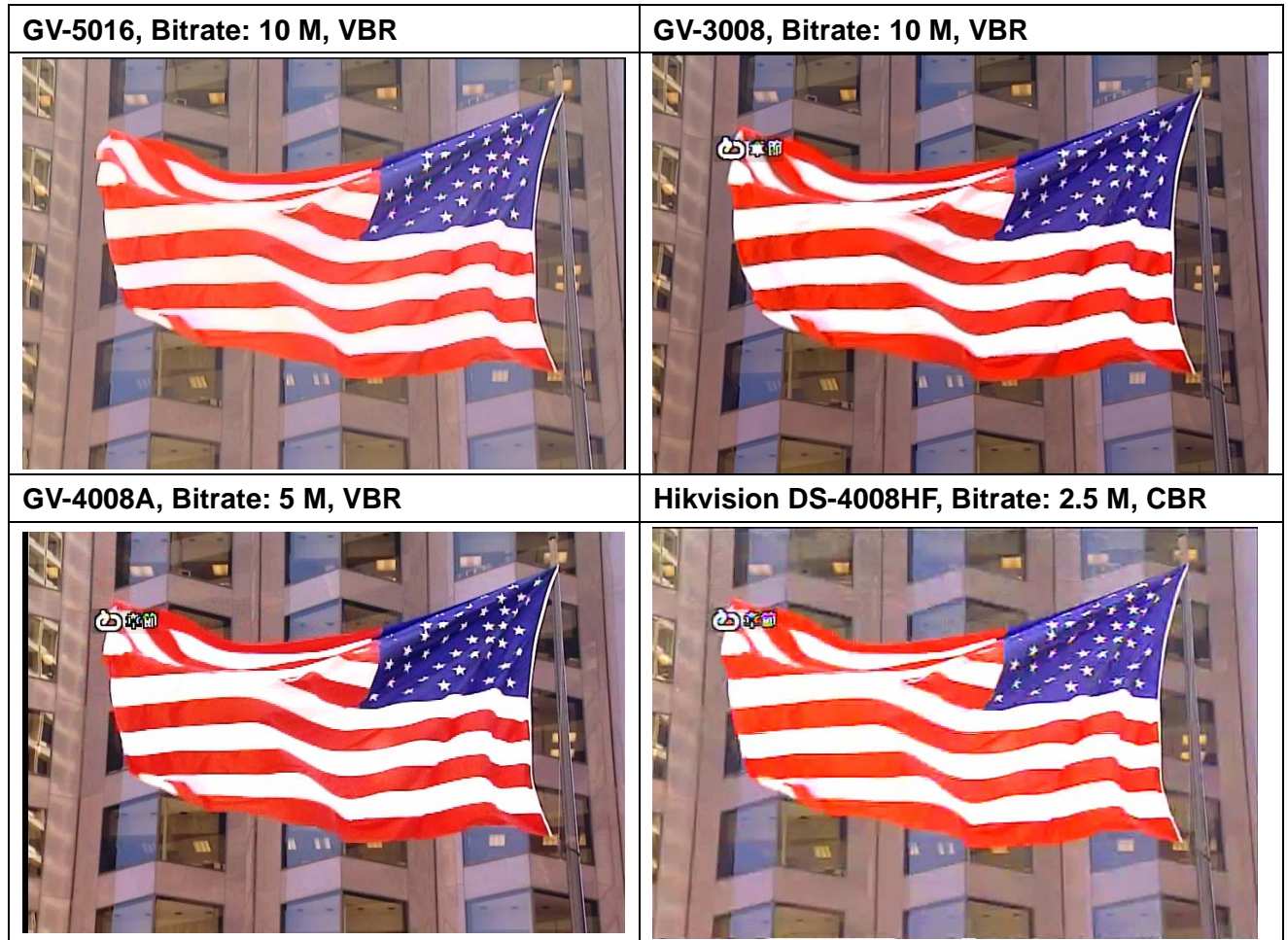
However, the Hikvision DS-4008HF image is not as smooth and has ghost images around the moving subject. The background in the Hikvision DS-4008HF image is also slightly blurry compared to GV-5016, GV-4008A, and GV-3008 images.

<b>GV-5016, Bitrate: 10 M, VBR</b>	<b>GV-3008, Bitrate: 10 M, VBR</b>
	
<b>GV-4008A, Bitrate: 5 M, VBR</b>	<b>Hikvision DS-4008HF, Bitrate: 2.5 M, CBR</b>
	





**Example 2:** This is a test video of a flag waving in the breeze. In the GV-5016, GV-3008 and GV-4008A images, both the waving flag and its background are clear in the image. However, in the Hikvision DS-4008HF image, the edges of the waving flag are not as sharp and the background is slightly blurry.







## 4. File Size Comparison

Below is a comparison of file size for one minute of single-channel recording. The file size can be discussed in two aspects: static scenes and motion scenes.

### Static scenes:

GV-3008 and GV-4008A are able to produce smaller file size at higher bitrate in comparison to Hikvision DS-4008HF because VBR allows lower bitrate in static scenes.

### Motion scenes:

In motion scenes, GV-5016, GV-4008A and GV-3008 produce marginally larger file size than the Hikvision DS-4008HF. This is because GV-5016, GV-3008 and GV-4008A use a different encoding method of VBR as opposed to the CBR used by the Hikvision DS-4008HF. As mentioned earlier, VBR provides better video quality than the CBR but results in bigger file size.

### File size for one minute of single-channel recording

Video Capture Card	Default Bitrate	File Size	
		Static Scene	Motion Scene
<b>GV-5016</b>	8 M	23.9 MB	58.3 MB
<b>GV-3008</b>	6 M	7.2 MB	45.6 MB
<b>GV-4008A</b>	4 M	10.3 MB	29.6 MB
<b>Hikvision DS-4008HF</b>	2.5 M	17.25 MB	17.25 MB

#### Note:

1. The GV-5016, GV-3008 and GV-4008A have five (5) quality levels and each quality corresponds to a different bitrate. The default quality level is Q3.
2. The bitrate range of GV-5016 is 5 M to 10 M. The maximum bitrate is 10 M for GV-3008, 5M for GV-4008A and 2.5 M for Hikvision DS-4008HF.



## 5. GV-5016 and GV-4008A Features

The features that distinguish GV-5016 and GV-4008A from GV-3008 are that **GV-5016 and GV-4008A come with built-in hardware de-interlace and hardware de-noise**. Using hardware de-interlace and de-noise lower the CPU loading by 5-10% when performing playback in Quad View, because it reduces software processing.

## 6. Conclusion

With the advantages of higher bitrate and VBR, the recording quality of GV-5016 and GV-3008 is the best among the capture cards. GV-4008A also uses VBR and a decent bitrate, and outperforms Hikvision DS-4008HF in recording quality.

In static scenes, the recorded file size of GV-3008 and GV-4008A are smaller than that of Hikvision DS-4008HF. In motion scenes where clarity is crucial, GV-5016, GV-3008 and GV-4008A provide excellent video quality because of their high bitrate. Moreover, with hardware de-interlace and de-noise, GV-5016 and GV-4008A are able to use less CPU resource to produce the sharpest moving scenes of all four cards.

Model	GV-5016	GV-3008	GV-4008A	Hikvision DS-4008HF
Bitrate	High	High	Medium	Low
VBR Support	Yes	Yes	Yes	No
Recording Quality	Excellent	Excellent	Good	Fair
Hardware De-interlace / Hardware De-noise	Yes	N/A	Yes	N/A
DSP Overlay	N/A	Yes	N/A	N/A