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About This Document

Keyword

Hi3516D V100 performance test

This document describes the performance test and specifications of the Hi3516D V100R001C0xSPC040 software development kit (SDK). The tests are conducted based on the Hi3516D demo board and Hi3516D V100R001C0xSPC040 SDK.

Abbreviations and Acronyms

Abbreviation or Acronym	Full Name
AEC	audio echo cancellation
AIO	audio input/output
ALC	automatic level control
ANR	automatic noise reduction
GSO	TCP segmentation offload
HDMI	high-definition multimedia interface
IVE	intelligent video engine
OSD	on-screen display
SD	secure digital
SDK	software development kit
TSO	TCP segmentation offload
UFO	UDP fragmentation offload
VI	video input
VO	video output

Abbreviation or Acronym	Full Name
VOD	video on demand
VPSS	video processing subsystem

Change History

Changes between document issues are cumulative. Therefore, the latest document issue contains all changes made in previous issues.

Date	Revision Version	Section Number	Change Description	Author
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1 Major Conclusions

Table 1-1 describes the major test conclusions.

Table 1-1 Major conclusions

Scenario	Description	Test Result	Remarks
Scenario 1: 3 megapixels@30 fps WDR typical online compression scenario	Video input (VI) 3 megapixels@30 fps input+WDR 2To1_FRAME_FULL_RATE+compressed output of three video processing subsystem (VPSS) channels+2-channel H.265 encoding (3-megapixel@30 fps 10 Mbit/s +VGA@30 fps 1 Mbit/s)+JPEG snapshot@2 fps+intelligent video engine (IVE) perimeter CIF@15 fps+1-channel audio AACLC simultaneous encoding and decoding+2-channel H.265@30 fps video on demand (VOD)+streams stored in the secure digital (SD) card (H.265@30 fps)	In the normal scenario: • CPU usage: 12.50%–22.70% (18.10% on average) • DDR usage: 36.65%–38.22% (36.80% on average)	The file system type of the SD card is FAT, and 256 KB data is written each time.
Scenario 2: 3 megapixels@30 fps WDR typical offline compression scenario	Output after the 3 megapixels@30 fps inputs are rotated by 180º and compressed+WDR 2To1_FRAME_FULL_RATE +compressed output of three VPSS channels+2-channel H.265 encoding (3 megapixels@30 fps 10 Mbit/s +VGA@30 fps 1 Mbit/s)+JPEG snapshot@2 fps+IVE perimeter CIF@15 fps+1-channel audio AACLC simultaneous encoding and decoding+6-channel VOD (3 megapixels@30 fps)+streams stored in the SD card (3 megapixels@30 fps)	In the normal scenario: • CPU usage: 53.90%–81.30% (67.63% on average) • DDR usage: 58.38%–60.84% (60.19% on average)	The file system type of the SD card is FAT, and 256 KB data is written each time.

Scenario	Description	Test Result	Remarks
Scenario 3: 2 megapixels@30 fps WDR offline compression H.265+H.264 scenario	Output after the 2 megapixels@30 fps inputs are rotated by 180º and compressed+compressed output of four VPSS channels+3-channel H.265 encoding (2 megapixels@30 fps 8 Mbit/s+720P@30 fps 4 Mbit/s+VGA@30 fps 1 Mbit/s)+JPEG snapshot@2 fps+IVE perimeter CIF@15 fps+1-channel audio AACLC simultaneous encoding and decoding+6-channel VOD (2 megapixels@30 fps)+streams stored in the SD card (2 megapixels@30 fps)	In the normal scenario: • CPU usage: 42.90%−50.60% (46.83% on average) • DDR usage: 41.96%-54.97% (52.01% on average)	The file system type of the SD card is FAT, and 256 KB data is written each time.
Scenario 4: 2 megapixels@30 fps WDR typical online compression scenario	2 megapixels@30 fps input+compressed output of four VPSS channels+3-channel H.265 encoding (2-megapixel@30 fps 10 Mbit/s +720P@30 fps 4 Mbit/s+VGA@30 fps 1 Mbit/s)+JPEG snapshot@2 fps+IVE perimeter CIF@15 fps+1-channel audio AACLC simultaneous encoding and decoding+2-channel 2-megapixel@30 fps VOD+streams stored in the SD card (2-megapixel@30 fps)	In the normal scenario: • CPU usage: 9.10%−15.80% (12.36% on average) • DDR usage: 31.17%−32.91% (31.8% on average)	The file system type of the SD card is FAT, and 256 KB data is written each time.
Scenario 5: 4 megapixels@50 fps WDR typical online compression scenario	4 megapixels@50 fps input and WDR VI output at 25 fps+compressed output of three VPSS channels+2-channel H.265 encoding (4 megapixels@25 fps 12 Mbit/s+VGA@25 fps 1 Mbit/s)+JPEG snapshot@2 fps+IVE perimeter CIF@15 fps+1-channel audio AACLC simultaneous encoding and decoding+2-channel 4 megapixels@25 fps VOD+streams stored in the SD card (4 megapixels@25 fps)	In the normal scenario: • Average CPU usage: 10.45%; fluctuation range: 5.90%−18.00% • Average DDR usage: 29.85%l; fluctuation range: 28.30%−31.33%	CUP:850M DDR:1.2G 16bit
Scenario 6: 4 megapixels@50 fps WDR & rotate typical offline compression scenario	2 megapixels@30 fps input and WDR VI output at 25 fps+rotation by 180º+compressed output of three VPSS channels+3-channel H.265 encoding (4 megapixels@25 fps 10 Mbit/s+VGA@25 fps 1 Mbit/s)+JPEG snapshot@2 fps+IVE perimeter CIF@15 fps+1-channel audio AACLC simultaneous encoding and decoding+2-channel 4 megapixels@25 fps VOD+streams stored in the SD card (4 megapixels@25 fps)	In the normal scenario: • Average CPU usage: 20.09%; fluctuation range: 13.60%−27.30% • Average DDR usage: 54.95%l; fluctuation range: 53.39%−56.00%	CUP:850M DDR:1.2G 16bit



- The CPU idle percentage is calculated as follows: CPU usage = 1 – (id% + io_wait%).
- The 3DNR and OSD functions are enabled in all scenarios.
- The compression mode is used by default unless otherwise specified.

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