

SATA-IP RAIDx4 Demo Instruction on 7-Series and KCU105

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This document describes how to use SATA-IP RAIDx4 Demo reference design bit-file on KC705, ZC706, VC707, VC709, and KCU105 board. This design is RAID0 system connecting with 4 SATA-III HDD/SSDs to increase transfer speed in system to be 4 times of one SATA-III HDD/SSDs.

1 Environment

For real board evaluation of RAID reference design, environment setup is shown in Figure 1-1 - Figure 1-5.



Figure 1-1 4-ch RAID0 demo environment on KC705





Figure 1-3 4-ch RAID0 demo environment on VC707





Figure 1-5 4-ch RAID0 demo environment on KCU105



2 Evaluation procedure

- Check that system is power off.
- Connect FMC SATA RAID board to FMC-HPC(#1) connector. <u>Note</u>: FMC SATA RAID board is provided by Design Gateway.
- Connect power to power connector on FMC SATA RAID board.
- Connect 4 SATA-III Device to CN0-CN3 on FMC SATA RAID board.
- Connect USB mini/micro B cable from USB UART Port on FPGA board to PC for Serial Console. KCU105 uses micro B cable while others use mini B cable.
- Connect USB micro B cable from Digilent on FPGA board to PC for JTAG programming.



microUSB for JTAG

Figure 2-1 mini and micro USB cable connection for KC705/ZC706/VC707/VC709



microUSB for JTAG Figure 2-2 two micro USB cable connections on KCU105

- Connect Power cable to FPGA board and then power up.
- Open serial monitoring software such as HyperTerminal. Terminal settings are Baud Rate=115200, Data=8 bit, Non-Parity, and Stop=1.



- Download bit-file to FPGA board.
 - For ZC706 board, please follow below steps.
 - 1) Copy "ready_for_download" folder to PC.
 - 2) Open "ISE Design Suite Command Prompt" and change working directory to "ready_for_download" folder.

🖎 ISE Design Suite Command Prompt	
C:\Xilinx\14.4\ISE_DS>d:	_
D:\>cd ready_for_download	
D:\ready_for_download>	
	_

Figure 2-3 ISE Design Suite Command Prompt for ZC706 board

3) Type "zc706_bist.bat" to start downloading configuration file and the firmware. On the console, "Download 10 ... Done" is displayed after both bit file and firmware file are loaded complete. Then, user can exit this menu and see LED status and Serial console.



Figure 2-4 Downloading configuration file for ZC706 board



- D X 🗪 ISE Design Suite Command Prompt . CortexA9 Processor Configuration 0×00000003 Version... User ID..... No of PC Breakpoints...... No of Addr/Data Watchpoints... 0×00000000 - -6 ..1 Connected to "arm" target. id = 64 Starting GDB server for "arm" target (id = 64) at TCP port no 1234 Target reset successfully Enabling level shifters and clearing fabric port resets Info: Info: Enabling level shifters and clearing fabric p
Downloading Program -- sata_host.elf
 section, .text: 0x0000000-0x0000629f
 section, .init: 0x000062b8-0x000062b7
 section, .fini: 0x000062b8-0x000062cf
 section, .rodata: 0x000062d0-0x00006b07
 section, .data: 0x00006b08-0x00007263
 section, .eh_frame: 0x00007264-0x00007267
 section, .bss: 0x00007268-0x0000730b
 section, .mu_tbl: 0x0000c008-0x0000c007
 section, .fini_array: 0x0000c008-0x0000c00b
 section, .heap: 0x0000c00c-0x0000c40f section, .heap: 0x0000c00c-0x0000c40f Download Progress.10.20.30.40.50..60.70.80.90.Done setting rt with program start Haaress טאטטטטטטט Processor started. Type "stop" to stop processor RUNNING> Disconnected from Target 64 Disconnected from Target 352 D:\ready_for_download>_

Figure 2-5 End of Downloading Firmware for ZC706 board

- For other boards, bit file can be downloaded from Vivado or iMPACT tool.



Figure 2-6 Download bit file from Vivado tool for other boards except ZC706



 After FPGA start operation, check GPIO LEDs status on FPGA board at LED0-LED7 (For ZC706, check LEDL-LED0). All LEDs must be ON, as shown in Figure 2-7. Each LED description is described as follows.





Figure 2-7 LED status after system set up complete on FPGA board

LED	ON	OFF						
LED0/L	OK	150 MHz of SATA clock on FMC SATA RAID cannot lock. Please check 150						
		MHz clock source on FMC SATA RAID board.						
LED1/C	OK	SATA-IP cannot detect SATA device. Please check SATA device at CN#0 and						
		the connection.						
LED2/R	Same description to LED0/L.							
LED3/0	Same description to LED1/C, but check SATA device at CN#1.							
LED4	Same description to LED0/L.							
LED5	Sam	Same description to LED1/C, but check SATA device at CN#2.						
LED6	Sam	Same description to LED0/L.						
LED7	Sam	ne description to LED1/C, but check SATA device at CN#3.						
		Table 2-1 LED Status of RAID reference design						



- The serial console on PC will display main menu, as shown in Figure 2-8, if all four SATA devices can initialize successfully. Then, user can execute each command operation following the menu.
- If any disk cannot link up and initialize, error message will be displayed to report error disk number, as shown in Figure 2-9. The disk number can be referred to CN number directly. For example, Disk1 means SATA device at CN#1.

-				^
Star	CT SA	IA.	RAID design [ver = 2.3]	
wai	cing (le	vice ready	
sata	a_res	εt		
	SATA	R	AID design menu [Ver = 2.3]	Ė
[0]	or[X]	:	SATA RESET	
[1]	or[I]	:	IDENTIFY DEVICE	
[2]	or[W]	:	WRITE DMA (EXT)	
[3]	or[R]	:	READ DMA (EXT)	=
141	or[D]	:	DUMP DATA IN DDR	
[]]				

Figure 2-8 Main Menu of host demo



Figure 2-9 The error message when disk number#1 has problem



3 Main Menu

3.1 SATA RESET

Select '0' or 'X' for sending hardware reset signal to all four SATA-IPs. Hardware reset is designed to reset both SATA-IP and SATA-PHY module in every SATA channel. So, SATA initialize process will restart again and display "SATA RESET selected", as shown in Figure 3-1, after sending this reset.

+++ SATA H	ESET selected +++	
Jaca_reset	e	
SATA H	AID design menu [Ver = 2.5]	
[0]or[X] :	SATA RESET	1
[1]or[I] :	IDENTIFY DEVICE	
	WRITE DMA (EXT)	
[2]or[W] :		12
[2]or[W] : [3]or[R] :	READ DMA (EXT)	1
[2]or[W] : [3]or[R] : [4]or[D] :	READ DMA (EXT) DUMP DATA IN DDR	1

Figure 3-1 SATA Reset Output

3.2 IDENTIFY DEVICE

Select '1' or 'l' for sending "IDENTIFY DEVICE" command to HDD/SSD. Disk information (Model name, 48-bit LBA supported, disk capacity) of all four channels will be displayed by using this menu, as shown in Figure 3-2. From this command, maximum LBA size will be calculated from disk which has minimum size x 4.

Model name[0]: Samsung SSD 850 PRO 256GB 48bit LBA is supported Capacity : 256GB (MAX LBA = 500118192) UDMA mode 6 supported Model name[1]: Samsung SSD 840 PRO Series 48bit LBA is supported Capacity : 256GB (MAX LBA = 500118192) UDMA mode 6 supported Model name[2]: Samsung SSD 840 PRO Series 48bit LBA is supported Capacity : 256GB (MAX LBA = 500118192) UDMA mode 6 supported Capacity : 256GB (MAX LBA = 500118192) UDMA mode 6 supported Model name[3]: Samsung SSD 840 PRO Series
<pre>48bit LBA is supported Capacity : 256GB (MAX LBA = 500118192) UDMA mode 6 supported Model name[1]: Samsung SSD 840 PRO Series 48bit LBA is supported Capacity : 256GB (MAX LBA = 500118192) UDMA mode 6 supported Model name[2]: Samsung SSD 840 PRO Series 48bit LBA is supported Capacity : 256GB (MAX LBA = 500118192) UDMA mode 6 supported Model name[3]: Samsung SSD 840 PRO Series</pre>
Capacity : 256GB (MAX LBA = 500118192) UDMA mode 6 supported Model name[1]: Samsung SSD 840 PRO Series 48bit LBA is supported Capacity : 256GB (MAX LBA = 500118192) UDMA mode 6 supported Model name[2]: Samsung SSD 840 PRO Series 48bit LBA is supported Capacity : 256GB (MAX LBA = 500118192) UDMA mode 6 supported Model name[3]: Samsung SSD 840 PRO Series
UDMA mode 6 supported Model name[1]: Samsung SSD 840 PRO Series 48bit LBA is supported Capacity : 256GB (MAX LBA = 500118192) UDMA mode 6 supported Model name[2]: Samsung SSD 840 PRO Series 48bit LBA is supported Capacity : 256GB (MAX LBA = 500118192) UDMA mode 6 supported Model name[3]: Samsung SSD 840 PRO Series
Model name[1]: Samsung SSD 840 PRO Series 48bit LBA is supported Capacity : 256GB (MAX LBA = 500118192) UDMA mode 6 supported Model name[2]: Samsung SSD 840 PRO Series 48bit LBA is supported Capacity : 256GB (MAX LBA = 500118192) UDMA mode 6 supported Model name[3]: Samsung SSD 840 PRO Series
48bit LBA is supported Capacity : 256GB (MAX LBA = 500118192) UDMA mode 6 supported Model name[2]: Samsung SSD 840 PRO Series 48bit LBA is supported Capacity : 256GB (MAX LBA = 500118192) UDMA mode 6 supported Model name[3]: Samsung SSD 840 PRO Series
Capacity : 256GB (MAX LBA = 500118192) UDMA mode 6 supported Model name[2]: Samsung SSD 840 PRO Series 48bit LBA is supported Capacity : 256GB (MAX LBA = 500118192) UDMA mode 6 supported Model name[3]: Samsung SSD 840 PRO Series
UDMA mode 6 supported Model name[2]: Samsung SSD 840 PRO Series 48bit LBA is supported Capacity : 256GB (MAX LBA = 500118192) UDMA mode 6 supported Model name[3]: Samsung SSD 840 PRO Series
Model name[2]: Samsung SSD 840 PRO Series 48bit LBA is supported Capacity : 256GB (MAX LBA = 500118192) JDMA mode 6 supported Model name[3]: Samsung SSD 840 PRO Series
48bit LBA is supported Capacity : 256GB (MAX LBA = 500118192) JDMA mode 6 supported Model name[3]: Samsung SSD 840 PRO Series
Capacity : 256GB (MAX LBA = 500118192) JDMA mode 6 supported Model name[3]: Samsung SSD 840 PRO Series
JDMA mode 6 supported Model name[3]: Samsung SSD 840 PRO Series
Model name[3]: Samsung SSD 840 PRO Series
48bit LBA is supported
Capacity : 256GB (MAX LBA = 500118192)
UDMA mode 6 supported
SATA RAID design menu [Ver = 2.3]
[0]or[X] : SATA RESET
<pre>[1]or[I] : IDENTIFY DEVICE</pre>
[2]or[W] : WRITE DMA (EXT)
[3]or[R] : READ DMA (EXT)
[4]or[D] : DUMP DATA IN DDR

Figure 3-2 Disk Information from IDENTIFY DEVICE command



3.3 WRITE DMA (EXT)

Select '2' or 'W' for sending "WRITE DMA (EXT)" command to HDD/SSD. Three inputs are required for this menu, i.e.

- Start LBA: this value, divided by 4, is the start sector number of each HDD/SSD to write data.
- Sector Count: this value, divided by 4, is the total transfer size in sector unit (512 byte) for writing each HDD/SSD. This size is the data size for CPU to fill to write buffer. If the input is more than 262144 (4 x maximum size of one SATA command), only 262144 sector data is filled and the later command will use same data area with the first command.
- Write Pattern: this value is used for selecting test pattern to write to buffer which will be forwarded to HDD/SSD. There are six test patterns in this demo, i.e. 32-bit increment [0], 32-bit decrement [1], 0000000H [2], FFFFFFFH [3], current data in read buffer [4], and LFSR counter [5].

After Software receives all inputs correctly,

- "Prepare data" will be displayed during CPU writing test pattern data to write buffer.
- "Execute Write" will be displayed during CPU sending WRITE DMA (EXT) command and transferring data from write buffer to HDD/SSD.
- Transfer speed will be displayed after write operation complete.

Figure 3-3 shows two examples of write command with different transfer size. Bigger transfer size can show higher performance speed.

Write operation is cancelled by two cases, i.e. receiving error input or receiving input from keyboard during CPU processing, as shown in Figure 3-4 and Figure 3-5 sequentially.











Figure 3-5 Write Operation cancelled from receiving input during operation



3.4 READ DMA (EXT)

Select '3' or 'R' for sending "READ DMA (EXT)" command to HDD/SSD. Two or three inputs are required for this menu, i.e.

- Start LBA: same description with Start LBA in WRITE DMA (EXT) menu, but this is for read operation.
- Sector Count: same description with Sector Count in WRITE DMA (EXT) menu. If this input is not more than 262144, the third input will be displayed for selecting verification pattern. If input is more than 262144, the third input will not be displayed to skip data verification process for checking performance only, as shown in Figure 3-6.
- Verify Pattern (Optional): this value is used for selecting verification pattern. This input should be matched with the pattern in WRITE DMA (EXT) menu. Six verification patterns can be selected, similar to write pattern. "Verify Data ... Success" is displayed for success case, and "Data Mismatch with failure value" is displayed for failure case, as shown in Figure 3-7.

Similar to WRITE DMA (EXT) menu, Read operation can be cancelled by receiving error input or receiving input from keyboard during CPU processing, as shown in Figure 3-8 and Figure 3-9 sequentially.

```
COM4 - PuTTY

+++ READ DMA EXT selected +++

Enter Start LBA : 0 - 2000472767 (0x773CCABF) => 0

Enter Sector Count : 4 - 2000472768 (0x773CCAC0) => 0x4000000

12345678

Total = 33[GB] , Time = 15[s] , Transfer speed = 2228[MB/s]

--- SATA RAID design menu [Ver = 2.3] ---

[0]or[X] : SATA RESET

[1]or[I] : IDENTIFY DEVICE

[2]or[W] : WRITE DMA (EXT)

[3]or[R] : READ DMA (EXT)

[4]or[D] : DUMP DATA IN DDR

[5]or[C] : SATA Channel RESET
```

Figure 3-6 READ DMA (EXT) command without verify





Figure 3-7 READ DMA (EXT) with verification process



Figure 3-8 Read Operation cancelled from error input



```
COM4 - PuTTY
                                                                 .
+++ READ DMA EXT selected +++
Enter Start LBA : 0 - 2000472767 (0x773CCABF) => 0
Enter Sector Count : 4 - 2000472768 (0x773CCAC0) => 0x4000000
Disk[4] RDCNT=0x800080 EXP=0x800000
current sector = 1900544, loopindex = 29 / 256 (loop)
command cancelled
sata reset
--- SATA RAID design menu [Ver = 2.3] ---
[0]or[X] : SATA RESET
[1]or[I] : IDENTIFY DEVICE
[2]or[W] : WRITE DMA (EXT)
[3]or[R] : READ DMA (EXT)
[4]or[D] : DUMP DATA IN DDR
                                                                 E
[5]or[C] : SATA Channel RESET
                                                                 +
```





3.5 DUMP DATA IN DDR

Select '4' or 'D' to dump data from buffer to display on Serial Console. In this demo, DDR3/4 is mapped to address = 8000_0000h - BFFF_FFFh (for all boards except KCU105) or 8000_0000h - FFFF_FFFh (for KCU105). Six submenus can be selected, i.e.

- 'G': this submenu is used for selecting read DDR address, as shown in Figure 3-10. The address can be input to be hex value by adding prefix "0x", and decimal value will be received with no any prefix.

[G]oto [N]ext	[P]rev [W]r	buf [R]dbuf	[C]learbuf	5 g	
10000008ex01	00000000	00000001	00000002	0000003	
0x980000101	00000004	00000005	00000006	00000007	
0x980000201	00000008	00000009	A0000000	000000B	
0x98000030]	000000C	000000D	0000000E	000000F	
(0x98000040]	00000010	00000011	00000012	00000013	
0x98000050]	00000014	00000015	00000016	00000017	
0x98000060]	00000018	00000019	0000001A	000001B	
0x98000070]	0000001C	0000001D	0000001E	0000001F	
(0x98000080]	00000020	00000021	00000022	00000023	
0x98000090]	00000024	00000025	00000026	00000027	
[0x980000A0]	00000028	00000029	0000002A	000002B	
0x980000B0]	0000002C	0000002D	0000002E	0000002F	
0x980000C0]	00000030	00000031	00000032	0000033	
[0x980000D0]	00000034	00000035	00000036	00000037	
0x980000E0]	0000038	00000039	0000003A	000003B	
[0x980000F0]	000003C	000003D	000003E	000003F	
[G]oto [N]ext	(P)rev [W]r	buf [R]dbuf	[C]learbuf	2	

Figure 3-10 Goto submenu example

- 'N': this submenu is used for reading next 256 byte data in buffer, as shown in Figure 3-11.
- 'P': this submenu is used for reading previous 256 byte data in buffer, as shown in Figure 3-11.



COM4 - PuTTY					COM4 - PuTTY				
Dump Address	? 0x9800000	0			[G]oto [N]ext	[P]rev [W]]rbuf [R]dbuf	[C]learbuf	? n
[0x98000000]	00000000	00000001	00000002	0000003	[0x98000100]	00000040	00000041	00000042	00000043
[0x98000010]	00000004	00000005	0000006	00000007	[0x98000110]	00000044	00000045	00000046	00000047
[0x98000020]	00000008	00000009	A000000	000000B	[0x98000120]	00000048	00000049	0000004A	0000004B
[0x98000030]	000000C	000000D	000000E	000000F	[0x98000130]	000004C	0000004D	0000004E	0000004F
[0x98000040]	00000010	00000011	00000012	00000013	[0x98000140]	00000050	00000051	00000052	00000053
[0x98000050]	00000014	00000015	00000016	00000017	[0x98000150]	00000054	00000055	00000056	00000057
[0x98000060]	00000018	00000019	0000001A	0000001B	[0x98000160]	00000058	00000059	000005A	000005B
[0x98000070]	0000001C	0000001D	0000001E	0000001F	[0x98000170]	0000005C	000005D	0000005E	0000005F
[0x98000080]	00000020	00000021	00000022	00000023	[0x98000180]	00000060	00000061	00000062	00000063
[0x98000090]	00000024	00000025	00000026	00000027	[0x98000190]	00000064	00000065	00000066	00000067
[0x980000A0]	00000028	00000029	0000002A	000002B	[0x980001A0]	00000068	00000069	A900000	000006B
[0x980000B0]	0000002C	0000002D	0000002E	0000002F	[0x980001B0]	0000006C	0000006D	000006E	0000006F
[0x980000C0]	00000030	00000031	00000032	0000033	[0x980001C0]	00000070	00000071	00000072	00000073
[0x980000D0]	00000034	00000035	00000036	00000037	[0x980001D0]	00000074	00000075	00000076	00000077
[0x980000E0]	0000038	00000039	000003A	000003B	[0x980001E0]	00000078	00000079	0000007A	000007B
[0x980000F0]	000003C	000003D	000003E	000003F	[0x980001F0]	0000007C	0000007D	000007E	0000007F
[G]oto [N]ext	[P]rev [W]	rbuf [R]dbuf	[C]learbuf	? n	[G]oto [N]ext	[P]rev [W]]rbuf [R]dbuf	[C]learbuf	? p
[0x98000100]	00000040	00000041	00000042	00000043	[0x98000000]	00000000	00000001	00000002	0000003
[0x98000110]	00000044	00000045	00000046	00000047	[0x98000010]	00000004	00000005	00000006	00000007
[0x98000120]	00000048	00000049	0000004A	000004B	[0x98000020]	80000000	00000009	A0000000	000000B
[0x98000130]	000004C	000004D	0000004E	0000004F	[0x98000030]	0000000C	000000D	0000000E	0000000F
[0x98000140]	00000050	00000051	00000052	00000053	[0x98000040]	00000010	00000011	00000012	00000013
[0x98000150]	00000054	00000055	00000056	00000057	[0x98000050]	00000014	00000015	00000016	00000017
[0x98000160]	00000058	00000059	0000005A	000005B	[0x98000060]	00000018	00000019	0000001A	0000001B
[0x98000170]	0000005C	0000005D	0000005E	0000005F	[0x98000070]	0000001C	0000001D	0000001E	0000001F
[0x98000180]	00000060	00000061	00000062	00000063	[0x98000080]	00000020	00000021	00000022	00000023
[0x98000190]	00000064	00000065	00000066	00000067	[0x98000090]	00000024	00000025	00000026	00000027
[0x980001A0]	00000068	00000069	0000006A	000006B	[0x980000A0]	00000028	00000029	0000002A	0000002B
[0x980001B0]	0000006C	0000006D	0000006E	0000006F	[0x980000B0]	0000002C	0000002D	0000002E	0000002F
[0x980001C0]	00000070	00000071	00000072	00000073	[0x980000C0]	00000030	00000031	00000032	00000033
[0x980001D0]	00000074	00000075	00000076	00000077	[0x980000D0]	00000034	00000035	00000036	00000037
[0x980001E0]	00000078	00000079	0000007A	000007B	[0x980000E0]	00000038	00000039	0000003A	000003B
[0x980001F0]	0000007C	000007D	000007E	0000007F	[0x980000F0]	0000003C	000003D	000003E	0000003F
[G]oto [N]ext	[P]rev [W]	rbuf [R]dbuf	[C]learbuf	?	[G]oto [N]ext	[P]rev [W]]rbuf [R]dbuf	[C]learbuf	2

Figure 3-11 Read Next/Previous 256 byte data in buffer

- 'W': this submenu is used for reading 256 byte data at top address of write buffer, as shown in Figure 3-12.
- 'R': this submenu is used for reading 256 byte data at top address of read buffer, as shown in Figure 3-12.

COM4 - PuTTY					B COM4 - PuTTY				
[G]oto [N]ext	[P]rev [W]	rbuf [R]dbuf	[C]learbuf	? W	[G]oto [N]ext	[P]rev [W]rbuf [R]dbuf	[C]learbuf	? r
[0x90000000]	00000000	00000001	00000002	0000003	[0x98000000]	00000000	00000001	00000002	0000003
[0x90000010]	0000004	00000005	0000006	00000007	[0x98000010]	00000004	00000005	0000006	00000007
[0x90000020]	0000008	00000009	A0000000	000000B	[0x98000020]	00000008	00000009	A0000000	000000B
[0x90000030]	00000000	000000D	000000E	000000F	[0x98000030]	00000000	000000D	0000000E	000000F
[0x90000040]	00000010	00000011	00000012	00000013	[0x98000040]	00000010	00000011	00000012	00000013
[0x90000050]	00000014	00000015	00000016	00000017	[0x98000050]	00000014	00000015	00000016	00000017
[0x90000060]	00000018	00000019	0000001A	0000001B	[0x98000060]	00000018	00000019	0000001A	0000001B
[0x90000070]	0000001C	0000001D	0000001E	0000001F	[0x98000070]	0000001C	0000001D	0000001E	0000001F
[0x90000080]	00000020	00000021	00000022	00000023	[0x98000080]	00000020	00000021	00000022	00000023
[0x90000090]	00000024	00000025	00000026	00000027	[0x98000090]	00000024	00000025	00000026	00000027
[0x900000A0]	00000028	00000029	0000002A	0000002B	[0x980000A0]	00000028	00000029	0000002A	0000002B
[0x900000B0]	0000002C	0000002D	0000002E	0000002F	[0x980000B0]	0000002C	0000002D	0000002E	0000002F
[0x900000C0]	00000030	00000031	00000032	00000033	[0x980000C0]	00000030	0000031	00000032	0000033
[0x900000D0]	00000034	00000035	00000036	00000037	[0x980000D0]	00000034	00000035	0000036	0000037
[0x900000E0]	00000038	00000039	0000003A	0000003B	[0x980000E0]	00000038	00000039	000003A	000003B
[0x900000F0]	000003C	000003D	000003E	0000003F	[0x980000F0]	0000003C	000003D	000003E	000003F
[G]oto [N]ext	[P]rev [W]	rbuf [R]dbuf	[C]learbuf	?	[G]oto [N]ext	[P]rev [W]rbuf [R]dbuf	[C]learbuf	?

Figure 3-12 Read 256 byte data at top of write/read buffer



- 'C': this submenu is used for clear data in write/read buffer to zero value. Select 'Y' to confirm for clear write/read buffer, or select 'N' to cancel clearing buffer.

Putty					×
<pre>[G]oto [N]ext Clear Write Bu Clear Read But SATA RAID [0]or[X] : SAN [1]or[I] : IDH [2]or[W] : WRN [3]or[R] : REA [4]or[D] : DUN [5]or[C] : SAN</pre>	[P]rev [W]r iffer ? [Y/N] design menu TA RESET ENTIFY DEVIC TE DMA (EXT) AD DMA (EXT) AP DATA IN D TA Channel R	buf [R]dbuf [] => <u>Y</u> : Cle => <u>Y</u> : Cle [Ver = 2.3] E) DR ESET	[C]learbuf ? ear Write Buf ar Read Buffe	c fer r	
[0x98000000]	00000000	00000000	00000000	00000000	
[0x98000010]	00000000	00000000	00000000	00000000	
[0x98000020]	00000000	00000000	00000000	00000000	
[0x98000030]	00000000	00000000	00000000	00000000	
[0x98000040]	00000000	00000000	00000000	00000000	
[0x98000050]	00000000	00000000	00000000	00000000	
[0x98000060]	00000000	00000000	00000000	00000000	
[0x98000070]	00000000	00000000	00000000	00000000	
[0x98000080]	00000000	00000000	00000000	00000000	
[0x98000090]	00000000	00000000	00000000	00000000	
[0x980000A0]	00000000	00000000	00000000	00000000	
[0x980000B0]	00000000	00000000	00000000	00000000	
[0x980000C0]	00000000	00000000	00000000	00000000	-
[0x980000D0]	00000000	00000000	00000000	00000000	
[0x980000E0]	00000000	00000000	00000000	00000000	Ξ
[0x980000F0]	00000000	00000000	00000000	00000000	_
[G]oto [N]ext	[P]rev [W]r	buf [R]dbuf	[C]learbuf ?		*

Figure 3-13 Clear buffer to be zero

User can exit this menu by input other key, such as 'x'.

[G]oto [N]ext [P]rev [W]rbuf [R]dbuf [C]learbuf ? 🗙	· ^
SATA RAID design menu [Ver = 2.3]	
[0]or[X] : SATA RESET	
[1]or[I] : IDENTIFY DEVICE	
2]or[W] : WRITE DMA (EXT)	
3]or[R] : READ DMA (EXT)	
4]or[D] : DUMP DATA IN DDR	
[5]or[C] : SATA Channel RESET	

Figure 3-14 Exit dump menu



3.6 SATA Channel RESET

Select '5' or 'C' to reset one of four SATA-IP and SATA-PHY.

One input is required to select SATA channel [0] - [3] which refers to SATA device at CN#0 to CN#3. LED1/3/5/7 will turn off during reset.

Putty	
+++ SATA Channel RESET selected +++	^
SATA RESET Channel : [0-3] => 0	
SATA RAID design menu (Ver = 2.3)	
[0]or[X] : SATA RESET	
[1]or[I] : IDENTIFY DEVICE	
[2]or[W] : WRITE DMA (EXT)	
[3]or[R] : READ DMA (EXT)	
[4]or[D] : DUMP DATA IN DDR	
<pre>[5]or[C] : SATA Channel RESET</pre>	

Figure 3-15 Reset for one SATA channel



4 Revision History

Revision	Date	Description
1.0	02-May-14	Initial version release
2.0	21-Jan-16	Support 7-series and KCU105 board