Synthesis Report for 'yuv_filter'

General Information

Date: Mon Nov 1 19:24:14 2021

Version: 2021.1.1 (Build 3286242 on Wed Jul 28 13:10:47 MDT 2021)

Project: yuv_filter.prj

Solution: solution3 (Vivado IP Flow Target)

Product family: zynq

Target device: xc7z020-clg400-1

Performance Estimates

• Timing

• Summary

Clock	Target	Estimated	Uncertainty
ap_clk	10.00 ns	7.271 ns	2.70 ns

• Latency

• Summary

Latency	(cycles)	Latency	(absolute)	Interva	Type	
min	max	max min max		min	max	Туре
120037	7372837	1.200 ms	73.728 ms	40013	2457613	dataflow

Detail

Instance

Instance	Module	Latenc	y (cycles)	Latency	(absolute)	Interva	al (cycles)	Type
Histairce	Module	min	max	min	max	min	max	Турс
entry_proc_U0	entry_proc	0	0	0 ns	0 ns	0	0	no
rgb2yuv_1_U0	rgb2yuv_1	40012	2457612	0.400 ms	24.576 ms	40012	2457612	no
yuv_scale_U0	_							
yuv2rgb_1_U0	yuv2rgb_1	40012	2457612	0.400 ms	24.576 ms	40012	2457612	no

Loop

N/A

Utilization Estimates

• Summary

Name	BRAM_18K	DSP	FF	LUT	URAM
DSP	-	-	-	-	-
Expression	-	-	0	60	-
FIFO	-	-	693	476	-
Instance	-	11	1155	1692	-
Memory	24576	-	0	0	0
Multiplexer	-	-	-	108	-
Register	-	-	12	-	-
Total	24576	11	1860	2336	0
Available	280	220	106400	53200	0
Utilization (%)	8777	5	1	4	0

• Instance

Instance	Module	BRAM_18K	DSP	FF	LUT	URAM
entry_proc_U0	entry_proc	0	0	2	38	0
rgb2yuv_1_U0	rgb2yuv_1	0	6	411	543	0
yuv2rgb_1_U0	yuv2rgb_1	0	4	373	613	0
yuv_scale_U0	yuv_scale	0	1	369	498	0
Total	4	0	11	1155	1692	0

• DSP

N/A

• Memory

Memory	Module	BRAM_18K	FF	LUT	URAM	Words	Bits	Banks	W*Bits*Banks
p_yuv_channels_ch1_U	p_yuv_channels_ch1	4096	0	0	0	2457600	8	1	19660800
p_yuv_channels_ch2_U	p_yuv_channels_ch1	4096	0	0	0	2457600	8	1	19660800
p_yuv_channels_ch3_U	p_yuv_channels_ch1	4096	0	0	0	2457600	8	1	19660800
p_scale_channels_ch1_U	p_yuv_channels_ch1	4096	0	0	0	2457600	8	1	19660800
p_scale_channels_ch2_U	p_yuv_channels_ch1	4096	0	0	0	2457600	8	1	19660800
p_scale_channels_ch3_U	p_yuv_channels_ch1	4096	0	0	0	2457600	8	1	19660800
Total	6	24576	0	0	0	14745600	48	6	117964800

• FIFO

Name	BRAM_18K	FF	LUT	URAM	Depth	Bits	Size:D*B
U_scale_c_U	0	99	0	-	3	8	24
V_scale_c_U	0	99	0	-	3	8	24
Y_scale_c_U	0	99	0	-	3	8	24
p_scale_height_U	0	99	0	-	2	16	32
p_scale_width_U	0	99	0	-	2	16	32
p_yuv_height_U	0	99	0	-	2	16	32
p_yuv_width_U	0	99	0	-	2	16	32
Total	0	693	0	0	17	88	200

• Expression

Variable Name	Operation	DSP	FF	LUT	Bitwidth P0	Bitwidth P1
ap_channel_done_p_scale_channels_ch1	and	0	0	2	1	1
ap_channel_done_p_scale_channels_ch2	and	0	0	2	1	1
ap_channel_done_p_scale_channels_ch3	and	0	0	2	1	1
ap_channel_done_p_scale_height	and	0	0	2	1	1
ap_channel_done_p_scale_width	and	0	0	2	1	1
ap_channel_done_p_yuv_channels_ch1	and	0	0	2	1	1
ap_channel_done_p_yuv_channels_ch2	and	0	0	2	1	1
ap_channel_done_p_yuv_channels_ch3	and	0	0	2	1	1
ap_channel_done_p_yuv_height	and	0	0	2	1	1
ap_channel_done_p_yuv_width	and	0	0	2	1	1
ap_idle	and	0	0	2	1	1
ap_sync_ready	and	0	0	2	1	1
entry_proc_U0_ap_start	and	0	0	2	1	1
rgb2yuv_1_U0_ap_continue	and	0	0	2	1	1
rgb2yuv_1_U0_ap_start	and	0	0	2	1	1
yuv2rgb_1_U0_ap_start	and	0	0	2	1	1
yuv_scale_U0_ap_continue	and	0	0	2	1	1
yuv_scale_U0_ap_start	and	0	0	2	1	1

ap_sync_channel_write_p_scale_channels_ch1	or	0	0	2	1	1
ap_sync_channel_write_p_scale_channels_ch2	or	0	0	2	1	1
ap_sync_channel_write_p_scale_channels_ch3	or	0	0	2	1	1
ap_sync_channel_write_p_scale_height	or	0	0	2	1	1
ap_sync_channel_write_p_scale_width	or	0	0	2	1	1
ap_sync_channel_write_p_yuv_channels_ch1	or	0	0	2	1	1
ap_sync_channel_write_p_yuv_channels_ch2	or	0	0	2	1	1
ap_sync_channel_write_p_yuv_channels_ch3	or	0	0	2	1	1
ap_sync_channel_write_p_yuv_height	or	0	0	2	1	1
ap_sync_channel_write_p_yuv_width	or	0	0	2	1	1
ap_sync_entry_proc_U0_ap_ready	or	0	0	2	1	1
ap_sync_rgb2yuv_1_U0_ap_ready	or	0	0	2	1	1
Total	30	0	0	60	30	30

• Multiplexer

Name	LUT	Input Size	Bits	Total Bits
ap_sync_reg_channel_write_p_scale_channels_ch1	9	2	1	2
ap_sync_reg_channel_write_p_scale_channels_ch2	9	2	1	2
ap_sync_reg_channel_write_p_scale_channels_ch3	9	2	1	2
ap_sync_reg_channel_write_p_scale_height	9	2	1	2
ap_sync_reg_channel_write_p_scale_width	9	2	1	2
ap_sync_reg_channel_write_p_yuv_channels_ch1	9	2	1	2
ap_sync_reg_channel_write_p_yuv_channels_ch2	9	2	1	2
ap_sync_reg_channel_write_p_yuv_channels_ch3	9	2	1	2
ap_sync_reg_channel_write_p_yuv_height	9	2	1	2
ap_sync_reg_channel_write_p_yuv_width	9	2	1	2
ap_sync_reg_entry_proc_U0_ap_ready	9	2	1	2
ap_sync_reg_rgb2yuv_1_U0_ap_ready	9	2	1	2
Total	108	24	12	24

• Register

Name	FF	LUT	Bits	Const Bits
ap_sync_reg_channel_write_p_scale_channels_ch1	1	0	1	0
ap_sync_reg_channel_write_p_scale_channels_ch2	1	0	1	0
ap_sync_reg_channel_write_p_scale_channels_ch3	1	0	1	0
ap_sync_reg_channel_write_p_scale_height	1	0	1	0
ap_sync_reg_channel_write_p_scale_width	1	0	1	0
ap_sync_reg_channel_write_p_yuv_channels_ch1	1	0	1	0
ap_sync_reg_channel_write_p_yuv_channels_ch2	1	0	1	0
ap_sync_reg_channel_write_p_yuv_channels_ch3	1	0	1	0
ap_sync_reg_channel_write_p_yuv_height	1	0	1	0
ap_sync_reg_channel_write_p_yuv_width	1	0	1	0
ap_sync_reg_entry_proc_U0_ap_ready	1	0	1	0
ap_sync_reg_rgb2yuv_1_U0_ap_ready	1	0	1	0
Total	12	0	12	0

Interface

• Summary

RTL Ports	Dir	Bits	Protocol	Source Object	C Type
ap_clk	in	1	ap_ctrl_hs	yuv_filter	return value
ap_rst	in	1	ap_ctrl_hs	yuv_filter	return value
ap_start	in	1	ap_ctrl_hs	yuv_filter	return value
ap_done	out	1	ap_ctrl_hs	yuv_filter	return value

ap_ready	out	1	É	p_ctrl_hs	_			return value
ap_idle	out	1	-	p_ctrl_hs				return value
in_channels_ch1_address0	out	22	ap_	_memory	_	_channels		array
in_channels_ch1_ce0	out			_memory	_	_channels		array
in_channels_ch1_d0	out			_memory	_	_channels		array
in_channels_ch1_q0	in	8	ap_	_memory	_	_channels		array
in_channels_ch1_we0	out	1	ap_	_memory	_	_channels		array
in_channels_ch1_address1	out	22	ap_	_memory	_	_channels		array
in_channels_ch1_ce1	out			_memory	_	_channels		array
in_channels_ch1_d1	out		-	_memory	_	_channels		array
in_channels_ch1_q1	in	8	ap_	_memory	in	_channels	_ch1	array
in_channels_ch1_we1	out	1	ap_	_memory	in	_channels	_ch1	array
in_channels_ch2_address0	out	22	ap_	_memory	in	_channels	_ch2	array
in_channels_ch2_ce0	out	1	ap_	_memory	in	_channels	_ch2	array
in_channels_ch2_d0	out	8	ap_	_memory	in	_channels	_ch2	array
in_channels_ch2_q0	in	8	ap_	_memory	in	_channels	_ch2	array
in_channels_ch2_we0	out	1	ap_	_memory	in	_channels	_ch2	array
in_channels_ch2_address1	out	22	ap_	_memory	in	_channels	_ch2	array
in_channels_ch2_ce1	out	1	ap_	_memory	in	_channels	_ch2	array
in_channels_ch2_d1	out	8	ap_	_memory	in	_channels	_ch2	array
in_channels_ch2_q1	in	8	ap_	_memory	in	_channels	_ch2	array
in_channels_ch2_we1	out	1	ap_	_memory	in	_channels	_ch2	array
in_channels_ch3_address0	out	22	ap_	_memory	in	_channels	_ch3	array
in_channels_ch3_ce0	out	1	ap_	_memory	in	_channels	_ch3	array
in_channels_ch3_d0	out	8	ap_	_memory	in	_channels	_ch3	array
in_channels_ch3_q0	in	8	ap_	_memory	in	_channels	_ch3	array
in_channels_ch3_we0	out	1	ap_	_memory	in	_channels	_ch3	array
in_channels_ch3_address1	out	22	ap_	memory	in	channels	_ch3	array
in_channels_ch3_ce1	out	1	ap_	memory	in	channels	_ch3	array
in_channels_ch3_d1	out	8	ap_	_memory	in	_channels	_ch3	array
in_channels_ch3_q1	in	8	ap_	memory	in	channels	_ch3	array
in_channels_ch3_we1	out	1	ap_	memory	in	channels	_ch3	array
in_width	in	16		ap_none		in_v	vidth	pointer
in_height	in	16		ap_none		in_h	eight	pointer
out_channels_ch1_address0	out	22	ap_	memory	out	channels	_ch1	array
out_channels_ch1_ce0	out	1	ap_	memory	out	_channels	_ch1	array
out_channels_ch1_d0	out	8	ap_	memory	out	_channels	_ch1	array
out_channels_ch1_q0	in	8	ap_	memory	out	channels	_ch1	array
out_channels_ch1_we0	out	1	ap	memory	out	channels	_ch1	array
out_channels_ch1_address1	out	22	ap	memory	out	channels	ch1	array
out_channels_ch1_ce1	out	1	ap	memory	out	channels	ch1	array
out_channels_ch1_d1	out	8	ap	memory	out	channels	ch1	array
	in				_	channels		array
out_channels_ch1_q1					_	channels		array
out_channels_ch1_q1 out_channels_ch1_we1	out	1	MP_					
	-			memory	out	channels	ch2	array
out_channels_ch1_we1 out_channels_ch2_address0	-	22	ap_		_	channels channels		
out_channels_ch1_we1 out_channels_ch2_address0	out	22	ap_ap_	memory	out		ch2	array
out_channels_ch1_we1 out_channels_ch2_address0 out_channels_ch2_ce0 out_channels_ch2_d0	out	22 1 8	ap_ ap_ ap_	memory memory	out_	channels channels	ch2 ch2	array array
out_channels_ch1_we1 out_channels_ch2_address0 out_channels_ch2_ce0 out_channels_ch2_d0 out_channels_ch2_q0	out out out	22 1 8 8	ap ap ap ap	memory memory memory	out out out	channels channels channels	ch2 ch2 ch2	array array array
out_channels_ch1_we1 out_channels_ch2_address0 out_channels_ch2_ce0 out_channels_ch2_d0 out_channels_ch2_q0 out_channels_ch2_we0	out out out in	22 1 8 8 1	ap_ap_ap_ap_ap_	memory memory memory	out out out out	channels channels channels	ch2 ch2 ch2 ch2	array array array array
out_channels_ch1_we1 out_channels_ch2_address0 out_channels_ch2_ce0 out_channels_ch2_d0 out_channels_ch2_q0 out_channels_ch2_we0 out_channels_ch2_address1	out out out in out out	22 1 8 8 1 22	ap_ap_ap_ap_ap_	memory memory memory memory	out out out out	channels channels channels channels	ch2 ch2 ch2 ch2 ch2	array array array array array
out_channels_ch1_we1 out_channels_ch2_address0 out_channels_ch2_ce0 out_channels_ch2_d0 out_channels_ch2_q0 out_channels_ch2_we0 out_channels_ch2_address1 out_channels_ch2_address1	out out in out out out out	22 1 8 8 1 22	ap_ap_ap_ap_ap_ap_	memory memory memory memory memory	out out out out out	channels channels channels channels channels	ch2 ch2 ch2 ch2 ch2 ch2	array array array array array array
out_channels_ch1_we1 out_channels_ch2_address0 out_channels_ch2_ce0 out_channels_ch2_d0 out_channels_ch2_q0 out_channels_ch2_we0 out_channels_ch2_address1 out_channels_ch2_ce1 out_channels_ch2_d1	out out out in out out out out	22 1 8 8 1 22 1 8	ap ap ap ap ap ap	memory memory memory memory memory memory	out out out out out out	channels channels channels channels channels channels	ch2 ch2 ch2 ch2 ch2 ch2 ch2	array array array array array array
out_channels_ch1_we1 out_channels_ch2_address0 out_channels_ch2_ce0 out_channels_ch2_d0 out_channels_ch2_q0 out_channels_ch2_we0 out_channels_ch2_address1 out_channels_ch2_address1	out out in out out out out	22 1 8 8 1 22 1 8	ap_ap_ap_ap_ap_ap_ap_ap_ap_	memory memory memory memory memory memory memory memory memory	out out out out out out	channels channels channels channels channels	ch2 ch2 ch2 ch2 ch2 ch2 ch2 ch2	array array array array array array array array array

out_channels_ch3_ce0 out 1 ap_memory out_channels_ch3 out_channels_ch3_d0 out 8 ap_memory out_channels_ch3 out_channels_ch3_q0 in 8 ap_memory out_channels_ch3 out_channels_ch3_we0 out 1 ap_memory out_channels_ch3 out_channels_ch3_address1 out 22 ap_memory out_channels_ch3 out_channels_ch3_ce1 out 1 ap_memory out_channels_ch3 out_channels_ch3_d1 out_shannels_ch3_d1 out_shannels_ch3_d1 in 8 ap_memory out_channels_ch3 out_channels_ch3_we1 out_1 ap_memory out_channels_ch3 out_channels_ch3_we1 out_1 ap_memory out_channels_ch3 out_width out_lout_width_ap_vld out_1 ap_vld out_width_pcout_height_ap_vld out_1 ap_vld out_height_pcout_height_ap_vld out_leight_ap_vld						
out_channels_ch3_d0 out 8 ap_memory out_channels_ch3 out_channels_ch3_q0 in 8 ap_memory out_channels_ch3 out_channels_ch3_we0 out 1 ap_memory out_channels_ch3 out_channels_ch3_address1 out 22 ap_memory out_channels_ch3 out_channels_ch3_ce1 out 1 ap_memory out_channels_ch3 out_channels_ch3_d1 out_shannels_ch3_d1 in 8 ap_memory out_channels_ch3 out_channels_ch3_we1 out_1 ap_memory out_channels_ch3 out_channels_ch3_we1 out_1 ap_memory out_channels_ch3 out_width out_l6 ap_vld out_width pout_width_ap_vld out_1 ap_vld out_width_pout_height_ap_vld out_1 ap_vld out_height_pout_height_ap_vld out_1 ap_vld out_height_pout_height_ap_vld out_1 ap_vld out_height_pout_height_ap_vld out_1 ap_vld out_height_pout_height_ap_vld out_height_pout_height_ap_vld out_height_ap_vld o	out_channels_ch3_address0	out	22	ap_memory	out_channels_ch3	array
out_channels_ch3_q0 in 8 ap_memory out_channels_ch3 out_channels_ch3_we0 out 1 ap_memory out_channels_ch3 out_channels_ch3_address1 out 22 ap_memory out_channels_ch3 out_channels_ch3_ce1 out 1 ap_memory out_channels_ch3 out_channels_ch3_d1 out_shannels_ch3_d1 in 8 ap_memory out_channels_ch3 out_channels_ch3_we1 out 1 ap_memory out_channels_ch3 out_channels_ch3_we1 out_1 ap_memory out_channels_ch3 out_width out_l6 ap_vld out_width pout_width_ap_vld out_1 ap_vld out_width_pout_height_ap_vld out_1 ap_vld out_height_pout_height_ap_vld out_1 ap_vld out_height_pout_height_ap_vld out_1 ap_vld out_height_pout_height_ap_vld out_leight_pout_height_ap_vld out_leight_pout_height_ap_vld out_leight_ap_vld out_leight_ap	out_channels_ch3_ce0	out	1	ap_memory	out_channels_ch3	array
out_channels_ch3_we0 out 1 ap_memory out_channels_ch3 out_channels_ch3_address1 out 22 ap_memory out_channels_ch3 out_channels_ch3_ce1 out 1 ap_memory out_channels_ch3 out_channels_ch3_d1 out_shannels_ch3_q1 in 8 ap_memory out_channels_ch3 out_channels_ch3_we1 out_1 ap_memory out_channels_ch3 out_width out_16 ap_vld out_width pout_width out_16 ap_vld out_width pout_height ap_vld out_height pout_height_ap_vld out_1 ap_vld out_height_pout_height_ap_vld out_1 ap_vld out_height_pout_height_ap_vld out_leight_ap_vld	out_channels_ch3_d0	out	8	ap_memory	out_channels_ch3	array
out_channels_ch3_address1 out 22 ap_memory out_channels_ch3 out_channels_ch3_ce1 out 1 ap_memory out_channels_ch3 out_channels_ch3_d1 out_shannels_ch3_d1 out_channels_ch3_d1 in 8 ap_memory out_channels_ch3 out_channels_ch3_we1 out 1 ap_memory out_channels_ch3 out_width out_16 ap_vld out_width pout_width_ap_vld out_1 ap_vld out_width_pout_height_ap_vld out_1 ap_vld out_height_pout_height_ap_vld out_1 ap_vld out_height_pout_height_ap_vld out_1 ap_vld out_height_pout_height_ap_vld out_1 ap_vld out_height_pout_height_ap_vld out_height_pout_height_ap_vld out_height_pout_height_ap_vld out_height_ap_vld ou	out_channels_ch3_q0	in	8	ap_memory	out_channels_ch3	array
out_channels_ch3_ce1 out 1 ap_memory out_channels_ch3 out_channels_ch3_d1 out_sap_memory out_channels_ch3 out_channels_ch3_q1 in 8 ap_memory out_channels_ch3 out_channels_ch3_we1 out_1 ap_memory out_channels_ch3 out_width out_16 ap_vld out_width pout_width ap_vld out_width pout_height out_leight out_leight ap_vld out_height pout_height ap_vld out_height ap_vld out	out_channels_ch3_we0	out	1	ap_memory	out_channels_ch3	array
out_channels_ch3_d1 out 8 ap_memory out_channels_ch3 out_channels_ch3_q1 in 8 ap_memory out_channels_ch3 out_channels_ch3_we1 out 1 ap_memory out_channels_ch3 out_width out 16 ap_vld out_width pout_width_ap_vld out_1 ap_vld out_width pout_height out_height ap_vld out_1 ap_vld out_height pout_height ap_vld out_1 ap_vld out_height pout_height ap_vld out_height ap_vld out_height ap_vld out_height pout_height ap_vld out_height ap_vl	out_channels_ch3_address1	out	22	ap_memory	out_channels_ch3	array
out_channels_ch3_q1 in 8 ap_memory out_channels_ch3 out_channels_ch3_we1 out 1 ap_memory out_channels_ch3 out_width out 16 ap_vld out_width pout_width_ap_vld out 1 ap_vld out_width pout_height out_leight out_leight out_leight ap_vld out_height pout_height ap_vld out_height pout_height ap_vld out_leight pout_height ap_vld out_height pout_height ap_vld out_leight pout_height ap_vld out_leight pout_height ap_vld out_height pout_height ap_vld out_leight ap_vld out_height ap_vld out_height ap_vld out_height ap_vld out_height ap_vld out_leight ap_vld out_leight ap_vld out_height ap_vld o	out_channels_ch3_ce1	out	1	ap_memory	out_channels_ch3	array
out_channels_ch3_we1 out 1 ap_memory out_channels_ch3 out_width out 16 ap_vld out_width pout_width ap_vld out_width pout_height out 16 ap_vld out_height pout_height ap_vld out_height ap_vld out_heig	out_channels_ch3_d1	out	8	ap_memory	out_channels_ch3	array
out_width out 16 ap_vld out_width pc out_width_ap_vld out 1 ap_vld out_width pc out_height out 16 ap_vld out_height pc out_height_ap_vld out 1 ap_vld out_height pc Y_scale in 8 ap_none Y_scale s U_scale in 8 ap_none U_scale s	out_channels_ch3_q1	in	8	ap_memory	out_channels_ch3	array
out_width_ap_vld out 1 ap_vld out_width pc out_height out 16 ap_vld out_height pc out_height_ap_vld out 1 ap_vld out_height pc Y_scale in 8 ap_none Y_scale s U_scale in 8 ap_none U_scale s	out_channels_ch3_we1	out	1	ap_memory	out_channels_ch3	array
out_height out 16 ap_vld out_height pout_height	out_width	out	16	ap_vld	out_width	pointer
out_height_ap_vld out_1 ap_vld out_height_pc Y_scale in 8 ap_none Y_scale s U_scale in 8 ap_none U_scale s	out_width_ap_vld	out	1	ap_vld	out_width	pointer
Y_scale in 8 ap_none Y_scale s U_scale in 8 ap_none U_scale s	out_height	out	16	ap_vld	out_height	pointer
U_scale in 8 ap_none U_scale s	out_height_ap_vld	out	1	ap_vld	out_height	pointer
	Y_scale	in	8	ap_none	Y_scale	scalar
V goals in 9 on none V goals	U_scale	in	8	ap_none	U_scale	scalar
v_scale in 8 ap_none v_scale s	V_scale	in	8	ap_none	V_scale	scalar