Mstar Introduction
For
PQ Adjustment

Brightness description

Base Address	Bank	High Address	Low Address	Loc MSB	Loc LSB	Name	Value	Description
2F	1A	**h001C**(h000E*2)		[1:0]		reg_main_bri_adjust_lsb		Main window Y adjust low bit
		h001E(h000F*2)		[7:0]		reg_main_bri_adjust		Main window Y adjust
	1A	**h002C** (h0016*2)		**[7:0]**		**reg_main_pre_y_gain**		**Main window pre- Y gain**
	1A	**h002E** (h0017*2)		**[1:0]**		**reg_main_post_bri_adjust_lsb**		**Main window post Y adjust low bit (2's complement)**
	1A	**h0030** (h0018*2)		**[7:0]**		**reg_main_post_bri_adjust**		**Main window post Y adjust**
2F	1A	**h0020**(h0010*2)		[6:0]		reg_main_black_start		Main window black start
				[15:8]		reg_main_black_slop		Main window black slope
		h0022(h0011*2)		[6:0]		reg_main_white_start		Main window white start
				[15:8]		reg_main_white_slop		Main window white slope
		h0028(h0014*2)		[7:0]		reg_main_y_gain		Main window Y gain
				[15:8]		reg_main_c_gain		Main window C gain
	1A	**h002C** (h0016*2)		**[7:0]** **[15:8]**		**reg_main_pre_y_gain** **reg_sub_pre_y_gain**		**Main window pre- Y gain** **Sub window pre- Y gain**
2F	F	**h006C**		[10:0]		reg_r_bri_offset		Main Brightness coefficient
2F	F	**h006E**		[10:0]		reg_g_bri_offset		Main Brightness coefficient
2F	F	**h0070**		[10:0]		reg_b_bri_offset		Main Brightness coefficient

Color description

Base Address	Bank	High Address	Low Address	Loc MSB	Loc LSB	Name	Value	Description	
2F	2B	h00C0 (h0060*2)		[6]		reg_main_icc_en		Main window ICC enable	
		h00C2 (h0061*2)		[3:0]		reg_main_sa_user_color0		Main window ICC saturation adjustment of color0	Other color
				[11:8]		reg_main_sa_user_color1		Main window ICC saturation adjustment of color1	R
		h00C4 (h0062*2)		[3:0]		reg_main_sa_user_color2		Main window ICC saturation adjustment of color2	G
				[11:8]		reg_main_sa_user_color3		Main window ICC saturation adjustment of color3	B
		h00C6 (h0063*2)		[3:0]		reg_main_sa_user_color4		Main window ICC saturation adjustment of color4	C
				[11:8]		reg_main_sa_user_color5		Main window ICC saturation adjustment of color5	M
		h00C8 (h0064*2)		[3:0]		reg_main_sa_user_color6		Main window ICC saturation adjustment of color6	Y
				[11:8]		reg_main_sa_user_color7		Main window ICC saturation adjustment of color7	橘色
		h00CA (h0065*2)		[3:0]		reg_main_sa_user_color8		Main window ICC saturation adjustment of color8	黃綠色
				[11:8]		reg_main_sa_user_color9		Main window ICC saturation adjustment of color9	藍綠色
		h00CC (h0066*2)		[3:0]		reg_main_sa_user_color10		Main window ICC saturation adjustment of color10	膚色
				[11:8]		reg_main_sa_user_color11		Main window ICC saturation adjustment of color11	膚色,(LG win10框不到的膚色)saturation較高的膚色
		h00CE		[3:0]		reg_main_sa_user_color12		Main window ICC saturation adjustment of color12	膚色-嘴唇

		(h0067*2)	[11:8]	reg_main_sa_user_color13		Main window ICC saturation adjustment of color13	膚色-頭髮
		h00D0 (h0068*2)	[3:0]	reg_main_sa_user_color14		Main window ICC saturation adjustment of color14	膚色-肉
			[11:8]	reg_main_sa_user_color15		Main window ICC saturation adjustment of color15	膚色-暗階(會跟很多綠色打到)

2F	1C	h0020 (h0010*2)	[7]	reg_main_ibc_en		Main window IBC enable	
		h0022 (h0011*2)	[5:0]	reg_main_ycolor0_adj		Main window IBC Y adjustment of color0	Other color
			[13:8]	reg_main_ycolor1_adj		Main window IBC Y adjustment of color1	R
		h0024 (h0012*2)	[5:0]	reg_main_ycolor2_adj		Main window IBC Y adjustment of color2	G
			[13:8]	reg_main_ycolor3_adj		Main window IBC Y adjustment of color3	B
		h0026 (h0013*2)	[5:0]	reg_main_ycolor4_adj		Main window IBC Y adjustment of color4	C
			[13:8]	reg_main_ycolor5_adj		Main window IBC Y adjustment of color5	M
		h0028 (h0014*2)	[5:0]	reg_main_ycolor6_adj		Main window IBC Y adjustment of color6	Y
			[13:8]	reg_main_ycolor7_adj		Main window IBC Y adjustment of color7	橘色
		h002A (h0015*2)	[5:0]	reg_main_ycolor8_adj		Main window IBC Y adjustment of color8	黃綠色
			[13:8]	reg_main_ycolor9_adj		Main window IBC Y adjustment of color9	藍綠色
			[5:0]	reg_main_ycolor10_adj		Main window IBC Y adjustment of color10	膚色

		h002C (h0016*2)	[13:8]	reg_main_ycolor11_adj		Main window IBC Y adjustment of color11	膚色,(LG win10框不到的膚色)saturation較高的膚色
		h002E (h0017*2)	[5:0]	reg_main_ycolor12_adj		Main window IBC Y adjustment of color12	膚色-嘴唇
			[13:8]	reg_main_ycolor13_adj		Main window IBC Y adjustment of color13	膚色-頭髮
		h0030 (h0018*2)	[5:0]	reg_main_ycolor14_adj		Main window IBC Y adjustment of color14	膚色-肉
			[13:8]	reg_main_ycolor15_adj		Main window IBC Y adjustment of color15	膚色-暗階(會跟很多綠色打到)

		h0048 (h0024*2)	[7]	reg_main_ihc_en		Main window IHC enable	
		h004A (h0025*2)	[5:0]	reg_main_hue_user_color0		Main window IHC hue adjustment of color0	Other color
			[13:8]	reg_main_hue_user_color1		Main window IHC hue adjustment of color1	R
		h004C (h0026*2)	[5:0]	reg_main_hue_user_color2		Main window IHC hue adjustment of color2	G
			[13:8]	reg_main_hue_user_color3		Main window IHC hue adjustment of color3	B
		h004E (h0027*2)	[5:0]	reg_main_hue_user_color4		Main window IHC hue adjustment of color4	C
			[13:8]	reg_main_hue_user_color5		Main window IHC hue adjustment of color5	M
		h0050 (h0028*2)	[5:0]	reg_main_hue_user_color6		Main window IHC hue adjustment of color6	Y
			[13:8]	reg_main_hue_user_color7		Main window IHC hue adjustment of color7	橘色
		h0052	[5:0]	reg_main_hue_user_color8		Main window IHC hue adjustment of color8	黃綠色

2F	1C	(h0029*2)	[13:8]	reg_main_hue_user_color9		Main window IHC hue adjustment of color9	藍綠色
		h0054 (h002A*2)	[5:0]	reg_main_hue_user_color10		Main window IHC hue adjustment of color10	膚色
			[13:8]	reg_main_hue_user_color11		Main window IHC hue adjustment of color11	膚色,(LG win10框不到的膚色)saturation較高的膚色
		h0056 (h002B*2)	[5:0]	reg_main_hue_user_color12		Main window IHC hue adjustment of color12	膚色-嘴唇
			[13:8]	reg_main_hue_user_color13		Main window IHC hue adjustment of color13	膚色-頭髮
		h0058 (h002C*2)	[5:0]	reg_main_hue_user_color14		Main window IHC hue adjustment of color14	膚色-肉
			[13:8]	reg_main_hue_user_color15		Main window IHC hue adjustment of color15	膚色-暗階(會跟很多綠色打到)

Peaking Description

Base Address	Bank	High Address	Low Address	Loc MSB	Loc LSB	Name	Value	Description
2F	19	h0020 (h0010*2)		0		reg_main_post_peaking_en		Main window 2D peaking enable
				1		reg_hlpf_dither_en		H Low pass filter dither bit enable
				2		reg_main_show_edge_mode		Main window show edge mode
				[6:4]		reg_main_y_lpf_coef		Main window horizontal Y low pass filter coefficient
				7		reg_vps_sram_act		2D peaking line-buffer sram active
				8		**reg_main_band1_peaking_en**		**Main window band1 peaking enable**
				9		**reg_main_band2_peaking_en**		**Main window band2 peaking enable**
				10		**reg_main_band3_peaking_en**		**Main window band3 peaking enable**
				11		**reg_main_band4_peaking_en**		**Main window band4 peaking enable**
				12		**reg_main_band5_peaking_en**		**Main window band5 peaking enable**
				13		**reg_main_band6_peaking_en**		**Main window band6 peaking enable**
				14		**reg_main_band7_peaking_en**		**Main window band7 peaking enable**
				15		**reg_main_band8_peaking_en**		**Main window band8 peaking enable**
		h0022 (h0011*2)		[1:0]		reg_main_band1_coef_step		Main window band1 coefficient step
				[3:2]		reg_main_band2_coef_step		Main window band2 coefficient step
				[5:4]		reg_main_band3_coef_step		Main window band3 coefficient step
				[7:6]		reg_main_band4_coef_step		Main window band4 coefficient step
				[9:8]		reg_main_band5_coef_step		Main window band5 coefficient step
				[11:10]		reg_main_band6_coef_step		Main window band6 coefficient step
				[13:12]		reg_main_band7_coef_step		Main window band7 coefficient step
				[15:14]		reg_main_band8_coef_step		Main window band8 coefficient step
		h0024 (h0012*2)		15		reg_vlpf_dither_en		Vertical Low pass filter dither bit enable
				[10:8]		reg_main_v_lpf_coef_1		Main window vertical up-dwon pixel Y LPF coefficient
				[14:12]		reg_main_v_lpf_coef_2		Main window vertical central pixel Y LPF coefficient
				[3:0]		reg_main_coring_thrd_1		Main window coring threshold 1

		h0026 (h0013*2)	[7:4]	reg_main_coring_thrd_2		Main window coring threshold 2
			[13:8]	reg_main_osd_sharpness_ctrl		**Main window user sharpness adjust(OSD control)**
		h0030 (h0018*2)	[6:0]	reg_main_band1_coef		Main window band1 coefficient(Sxxx.xxx)
			[14:8]	reg_main_band2_coef		Main window band2 coefficient(Sxxx.xxx)
		h0032 (h0019*2)	[6:0]	reg_main_band3_coef		Main window band3 coefficient(Sxxx.xxx)
			[14:8]	reg_main_band4_coef		Main window band4 coefficient(Sxxx.xxx)
		h0034 (h001a*2)	[6:0]	reg_main_band5_coef		Main window band5 coefficient(Sxxx.xxx)
			[14:8]	reg_main_band6_coef		Main window band6 coefficient(Sxxx.xxx)
		h0036 (h001b*2)	[6:0]	reg_main_band7_coef		Main window band7 coefficient(Sxxx.xxx)
			[14:8]	reg_main_band8_coef		Main window band8 coefficient(Sxxx.xxx)
		h0038 (h001C*2)	[3:0]	reg_main_peaking_term1_select		Main window peaking term1 select
			[7:4]	reg_main_peaking_term2_select		Main window peaking term2 select
			[11:8]	reg_main_peaking_term3_select		Main window peaking term3 select
			[15:12]	reg_main_peaking_term4_select		Main window peaking term4 select
		h003A (h001d*2)	[3:0]	reg_main_peaking_term5_select		Main window peaking term5 select
			[7:4]	reg_main_peaking_term6_select		Main window peaking term6 select
			[11:8]	reg_main_peaking_term7_select		Main window peaking term7 select
			[15:12]	reg_main_peaking_term8_select		Main window peaking term8 select
2F	19	**h0040** (h0020*2)	[7:0]	reg_band1_overshoot_limit		Main window band1 overshoot limit(最高頻)
			[15:8]	reg_band2_overshoot_limit		Main window band2 overshoot limit(次高頻)
		h0042 (h0021*2)	[7:0]	reg_band3_overshoot_limit		Main window band3 overshoot limit(三高頻)
			[15:8]	reg_band4_overshoot_limit		Main window band4 overshoot limit(四高頻)
		h0044 (h0022*2)	[7:0]	reg_band5_overshoot_limit		Main window band5 overshoot limit
			[15:8]	reg_band6_overshoot_limit		Main window band6 overshoot limit
		h0046 (h0023*2)	[7:0]	reg_band7_overshoot_limit		Main window band7 overshoot limit
			[15:8]	reg_band8_overshoot_limit		Main window band8 overshoot limit
		h0048	[7:0]	reg_band1_undershoot_limit		Main window band1 undershoot limit(最高頻)

		(h0024*2)	[15:8]	reg_band2_undershoot_limit		Main window band2 undershoot limit(次高頻)
		h004A (h0025*2)	[7:0]	reg_band3_undershoot_limit		Main window band3 undershoot limit(三高頻)
			[15:8]	reg_band4_undershoot_limit		Main window band4 undershoot limit(四高頻)
		h004C (h0026*2)	[7:0]	reg_band5_undershoot_limit		Main window band5 undershoot limit
			[15:8]	reg_band6_undershoot_limit		Main window band6 undershoot limit
		h004E (h0027*2)	[7:0]	reg_band7_undershoot_limit		Main window band7 undershoot limit
			[15:8]	reg_band8_undershoot_limit		Main window band8 undershoot limit

CTI description

2F	23	**h00C0** (h0060*2)	[2:0]	reg_cti_lpf_coef_f2		main window CTI LPF coefficients
			[6:4]	reg_cti_step_f2		main window CTI step
		h00C2 (h0061*2)	15	reg_cti_en_f2		main window CTI enable
		h00C4 (h0062*2)	[3:0]	reg_cti_mutual_thd_f2		main window CTI mutual threshold
		h00C5 (h0062*2)	[10:8]	reg_cti_mutual_step_f2		main window CTI mutual step
2F	27	**h0040** (h0020*2)	0	reg_main_cti_en		Main window CTI enable
		h0042 (h0021*2)	[5:4]	reg_main_cti_step		Main window CTI step
			[11:8]	reg_main_cti_coring_thrd		Main window CTI coring threshold
		h0044 (h0022*2)	[5:0]	reg_main_cti_band_coef		Main window CTI band pass filter coefficient

NR description

Base Address	Bank	High Address	Low Address	Loc MSB	Loc LSB	Name	Value	Description
2F	6	h0042 (h0021*2)		0		reg_f2_dnr_en		F2 DNR All (PRESNR+MED+CORE) Function Enable
				1		reg_f2_dnr_core_en		F2 DNR Core Function Enable
2F	6	h0080(h0040*2)		[15:0]		reg_dnr_tabley_0		DNR TABLEY_0
		h0082(h0041*2)		[15:0]		reg_dnr_tabley_1		DNR TABLEY_1
		h0084(h0042*2)		[15:0]		reg_dnr_tabley_2		DNR TABLEY_2
		h0086(h0043*2)		[15:0]		reg_dnr_tabley_3		DNR TABLEY_3
		h0088(h0044*2)		[15:0]		reg_dnr_tablec_0		DNR TABLEC_0
		h008A(h0045*2)		[15:0]		reg_dnr_tablec_1		DNR TABLEC_1
		h008C(h0046*2)		[15:0]		reg_dnr_tablec_2		DNR TABLEC_2
		h008E(h0047*2)		[15:0]		reg_dnr_tablec_3		DNR TABLEC_3
		h0090(h0048*2)		[11:0]		reg_dnr_tabley_lsb	0xE88	DNR TABLEY_LSB
		h0092(h0049*2)		[11:0]		reg_dnr_tablec_lsb		DNR TABLEC_LSB
2F	2A	h000E(h0007*2)		15		reg_nr_en		nr enable
	2A	h000E(h0007*2)		14		reg_pdnr_en		pdnr enable
	2A	h000E(h0007*2)		0		reg_ucnr_en		ucnr enable

Scale description

Base Address	Bank	High Address	Low Address	Loc MSB	Loc LSB	Name	Value	Description
2F	2	**h000A** (h0005*2)		15		reg_ip2hsden		H Scaliing Down enable(前縮)
		h0012 (h0009*2)		15		reg_pre_vdown		V Scaling Down enable(前縮)
	23	**h00010** (h0008*2)		8		reg_scale_ho_en_f2		main window horizontal scaling enable
		h0014 (h000a*2)		8		reg_scale_ve_en_f2		main window vertical scaling enable

Comb description

Base Address	High Address	Low Address	Loc MSB	Loc LSB	Name	Value	Description
36	h10	h10	7	7	reg_svdoin		S-video input
36	h10	h10	6	6	reg_svdocbp		Band pass filter for S-vidoe C channel
36	h10	h10	5	5	reg_diradcin		Direct use ADC input(bypass AFEC)
36	h10	h10	4	4	reg_new_comb_en		New Comb enable
36	h10	h10	3	3	reg_manucomb		0/1 -> auto/manu select working mode
36	h10	h10	2	0	reg_workmd		Working mode: 0/1: 1D, 2: 2D, other: reserved
36	h31	h31	7	0	MotYThU	20h	Upper bound motionY threshold.
36	h32	h32	7	0	MotYThL	10h	Lower bound motionY threshold.
36	h33	h33	7	0	MotCThU	20h	Upper bound motionC threshold.
36	h34	h34	7	0	MotCThL	10h	Lower bound motionC threshold.
36	h70	h70	7	6	reg_colkillmd	0xD8	Color kill mode 00: off 01: auto 1x: decided by MCU
36	h70	h70	5	4	reg_cgmode		Auto chroma gain mode 00: off 01: auto 10: manu 11: MCU control
36	h70	h70	3	0	reg_reserved_34		reserved
36	h71	h71	7	7	reg_SawCmpDeten	0x87	
			6	4			sawdet_debug_md(4C[4] = 1 ; 4C[3:0] = 3 , sawdet_debug ;) 0 : Blendvalue1 (T delta diff); 1:sawdiff4(2DC value) ; 2 :Blendvalue2(Time F4-F0) 3 : Blendvalue3(H4) ; 4:BlendValue4(2DC) ; 5:BlendValue5(B diff)
			3	0			reg_Saw_TIME_H4DIFF_LO weight: [7:6] 0 , 1, 2, 4 ; Threshold:[5:4] 32, 64, 128, 256
36	h72	h72	7	0	reg_regbsthght		Burst height for auto chroma gain, 0: auto, 112 for NTSC and 117 for PAL; other: use RegBstHght/DetBstHght as C gain
36	h73	h73	7	0	reg_regctst		Contrast adjustment coefficient

36	h74	h74	7	0	reg_regbrht		Brightness adjustment coefficient
36	h75	h75	7	0	reg_regsat		Saturation adjustment coefficient
36	h80	h80	7	0	reg_ygain	0xC8	Luma gain for U/V demodulation
36	h81	h81	7	0	reg_cbgain	0x96	Cb gain for U/V demodulation
36	h82	h82	7	0	reg_crgain	0x70	Cr gain for U/V demodulation
36	h83	h83	7	6	reg_ctiirmd		IIR coeficient for CTI
36	h83	h83	5	4	reg_ctimode		CTI mode 00: off 01: weak 10: normal 11: strong
36	h83	h83	3	2	reg_ypipdly		Luma pipe delay
36	h83	h83	1	0	reg_cbcrlpmd		Cb/Cr low pass mode 00: off 01: weak 10: normal 11: strong **(如果有FIR CTI，這兩個bit會變成開關)**
36	hC0	hC0	1	0	reg_lumaout_mode		Luma Output Mode ([00]: Normal [01]: 1DH [10]: 1DV [11]: 2D)
36	hC0	hC0	3	2	reg_crmaout_mode	0x03	Chroma Output Mode ([00]: Normal [01]: 1DH [10]: 1DV [11]: 2D)
36	hC0	hC0	5	4	reg_luma2d_sel	0x0A(P/N)	Luma 2D Select (5x5/5x5/adp/adp)
36	hC0	hC0	7	6	reg_crma2d_sel		Chroma 2D Select (5x5/5x5/adp/DEMbld)

SEACM description

High Address	Low Address	Loc MSB	Loc LSB	Name	MSB	LSB	Bits	Init	r/w	Description
h19	h19	1	0	reg_clpmd	1	0	2	h3	rw	Chroma LPF mode. 0: bypass ; 1: 1.5MHz ; 2: 1.25MHz ; 3: 1MHz
h1E	h1E	7	5	reg_scm_ysep_fltmd	2	0	3	h00	rw	Y seperation filter selection
h1E	h1E	4	4	reg_scm_cbcrlpon	0	0	1	h00	rw	SECAM Cb/Cr LPF switch. 0: off ; 1: on
h1E	h1E	3	3	reg_lumafixmd	0	0	1	h00	rw	Luma Fix Mode. 0: normal ; 1: Luma is controlled by SDBKLevel
h1E	h1E	2	0	reg_scm_ydlymd	2	0	3	h4	rw	SECAN Luma(Y) delay mode. 0: advance 4 ; 1: advance 3 ; 2: advance 2 ; 3: advance 1 ; 4: normal ; 5: delay 1 ; 6: delay 2 ; 7: delay 3
h25	h25	7	7	reg_yblk	0	0	1	h00	rw	Y blanking enable
h25	h25	6	4	reg_scm_ifmode	2	0	3	h00	rw	SECAM IF Compensation Filter Mode 還要設定3660h[5:0]，您可以視3660h[5:0]為可變動係數 IF Mode 0: 3825h[6:4] = 0x0 à No IF compensation IF Mode 1: 3825h[6:4] = 0x1 , 3660h[5:0] = 0x4 IF Mode 2: 3825h[6:4] = 0x1 , 3660h[5:0] = 0x8 IF Mode 3: 3825h[6:4] = 0x1 , 3660h[5:0] = 0xF IF Mode 4: 3825h[6:4] = 0x4 , 3660h[5:0] = 0x28
h25	h25	3	2	reg_testscm	1	0	2	h00	rw	Test SECAM Db/Dr control bits. TestSCM[1]: enable bit. TestSCM[0]: selection bit, 1'b0: Dr = 12'hC01, Db = 12'hEA5 ; 1'b1: Dr = TestSCM_Dr ; Db = TestSCM_Db.
h25	h25	1	0	reg_sdbklevel_9_8	1	0	2	h00	rw	Static De-Blanking level (upper 2 bits). When LumaFixMd(1Eh[3]) is set, luma value is controlled by SDBKLevel.