

OM6220 (12 inch) BLE Register Map

Version 0.3

Liuc
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Revision History

Revision	Date	Description
V0.1	Mar 25, 2021	<ol style="list-style-type: none"> 1. OM6220 is 12 inch wafer version of HS6220; 2. Update default value of FAGC_CTRL_1 and TEST_PKDET; 3. Add WHITE_LIST_RXADDR_1 and WHITE_LIST_RXADDR_2 register;
V0.2	Mar 31, 2021	<ol style="list-style-type: none"> 1. Add scan white list filter mode 2. Add RTC Timer mode register
V0.3	Jul 24, 2023	<ol style="list-style-type: none"> 1. Update TX power setting

Register Table

NAME (TYPE)	ADDRESS	PAGE
BANK0.....		5
CONFIG (RW) ADDRESS: 00H.....		5
EN_AA (RW) ADDRESS: 01H.....		6
EN_RXADDR (RW) ADDRESS: 02H		6
PMU_CTL (RW) ADDRESS: 03H.....		7
SETUP_RETR (RW) ADDRESS: 04H		7
RF_CH (RW) ADDRESS: 05H.....		8
RF_SETUP (RW) ADDRESS: 06H.....		8
STATUS (RW) ADDRESS: 07H.....		9
BLE_ACCESS_ADDR (RW) ADDRESS: 0AH.....		10
BLE_TIMER (RW) ADDRESS: 0BH.....		10
BLE_CTL (RW) ADDRESS: 0CH		11
CLKN_SYNC ADDRESS: 0DH.....		11
TX_ADVA(RW) ADDRESS: 10H.....		12
TX HEADER (RW) ADDRESS: 11H.....		13
BLE_CRC_INIT (RW) ADDRESS: 12H		13
BLE_SETUP_DELAY (RW) ADDRESS: 13H.....		14
RX HEADER(R) ADDRESS: 14H		15
RX_ADDA(R) ADDRESS: 15H.....		16
STATUS_EXT (RW) ADDRESS: 16H		16
FIFO_STATUS (RW) ADDRESS: 17H		17
CONFIG_EXT (RW) ADDRESS: 18H		18
RTC_TIMER_MODE (RW) ADDRESS: 19H.....		18
WHITE_LIST_RXADDR_1 (RW) ADDRESS: 1AH.....		19
WHITE_LIST_RXADDR_2 (RW) ADDRESS: 1BH.....		20
DYNPD (RW) ADDRESS: 1CH.....		20
FEATURE (RW) ADDRESS: 1DH.....		21
SETUP_VALUE (RW) ADDRESS: 1EH.....		21
PRE_GURD (RW) ADDRESS: 1FH		22
BANK1		23
LINE (R) ADDRESS: 00H		23
PLL_CTL0 (RW) ADDRESS: 01H.....		23
PLL_CTL1 (RW) ADDRESS: 02H.....		26
CAL_CTL (RW) ADDRESS: 03H.....		27
STATUS (RW) ADDRESS: 07H.....		29
STATE (RW) ADDRESS: 08H.....		29
CHAN (RW) ADDRESS: 09H.....		30
FDEV (RW) ADDRESS: 0CH		31

OM6220 (12 inch) BLE Register Map v0.3

DAC_RANGE (RW)	ADDRESS: 0DH.....	31
CTUNING (RW)	ADDRESS: 0FH.....	32
FTUNING (RW)	ADDRESS: 10H.....	32
RX_CTRL (RW)	ADDRESS: 11H.....	33
FAGC_CTRL_1 (RW)	ADDRESS: 13H	33
DOC_DACI (RW)	ADDRESS: 1AH.....	34
DOC_DACQ (RW)	ADDRESS: 1BH.....	35
AGC_CTRL (RW)	ADDRESS: 1CH.....	35
AGC_GAIN (RW)	ADDRESS: 1DH.....	36
RF_IVGEN (RW)	ADDRESS: 1EH.....	37
TEST_PKDET (RW)	ADDRESS: 1FH	38

Register Definition

BANK0

CONFIG (RW) Address: 00h

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
MASK_EVT_DS	MASK_RX_DR	MASK_TX_DS	MASK_SYNC_DS	EN_CRC	CE_REG	PWR_UP	PRIM_RX
1	0	0	0	1	0	0	1
RW	RW	RW	W	RW	RW	RW	RW

Description of Word

Bit	Value	Symbol	Description
7	0	MASK_EVT_DS	Mask event interrupt by Event_Done
			0 Reflect Event_Done as active low interrupt on the IRQ pin
			1 Interrupt not reflected on the IRQ pin
6	0	MASK_RX_DR	Mask interrupt caused by RX_DR
			0 Reflect RX_DR as active low interrupt on the IRQ pin
			1 Interrupt not reflected on the IRQ pin
5	0	MASK_TX_DS	Mask interrupt caused by TX_DS
			0 Reflect TX_DS as active low interrupt on the IRQ pin
			1 Interrupt not reflected on the IRQ pin
4	0	MASK_SYNC_DS	Mask interrupt caused by sync detector
			0 Reflect SYNC_DS as active low interrupt on the IRQ pin
			1 Interrupt not reflected on the IRQ pin
3	1	EN_CRC	Enable CRC. Forced high if one of the bits in the EN_AA is high
			0 Disable CRC
			1 Enable CRC
2	0	CE_REG	CE controlled by register
			0 CE low
			1 CE high
1	0	PWR_UP	Power up control
			0 POWER DOWN
			1 POWER UP
0	1	PRIM_RX	RX/TX control
			0 PTX
			1 PRX

OM6220 (12 inch) BLE Register Map v0.3

EN_AA (RW) Address: 01h

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Reversed					ENAA_P2	ENAA_P1	ENAA_P0
0					1	1	1
RW					RW	RW	RW

Description of Word

Bit	Value	Symbol	Description
7:3	0	Reserved	
2	1	ENAA_P2	Enable auto acknowledgement data pipe 2
			0 Disable
			1 Enable
1	1	ENAA_P1	Enable auto acknowledgement data pipe 1
			0 Disable
			1 Enable
0	1	ENAA_P0	Enable auto acknowledgement data pipe 0
			0 Disable
			1 Enable

EN_RXADDR (RW) Address: 02h

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Reversed				scramble_en	ERX_P2	ERX_P1	ERX_P0
0				1	0	1	1
RW				RW	RW	RW	RW

Description of Word

Bit	Value	Symbol	Description
7:4	0	Reserved	
3	1	scramble_en	Scramble enable
			0 Disable
			1 Enable
2	0	ERX_P2	Enable data pipe 2
			0 Disable
			1 Enable
1	1	ERX_P1	Enable data pipe 1
			0 Disable

OM6220 (12 inch) BLE Register Map v0.3

			1	Enable
0	1	ERX_P0	Enable data pipe 0	
			0	Disable
			1	Enable

PMU_CTL (RW) Address: 03h

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Rtc32k_rdy_enb_reg	Rtc32k_rdy_enb_mn	Digldo_enb_dly_reg	Digldo_enb_mn	Digldo_enb_reg	rtc32k_en	RF_PWRDWN[1:0]	
1	0	1	0	1	0	01	
RW	RW	RW	RW	RW	RW	RW	

Description of Word

Bit	Value	Symbol	Description
7	1	Rtc32k_rdy_enb_reg	For debug mode
6	0	Rtc32k_rdy_enb_mn	Rtc32k manual mode select, 0 for fsm control; 1 for manual mode
5	1	Digldo_enb_dly_reg	For debug mode
4	0	Digldo_enb_mn	Digital ldo manual mode select, 0 for fsm control; 1 for manual mode
3	1	Digldo_enb_reg	For debug mode
2	0	rtc32k_en	Rtc32k enable, 0 for disable; 1 for enable, BLE mode should be set 1
1:0	2'b01	RF_PWRDWN[1:0]	Working mode select 00 active mode 01 deep sleep mode 10 light sleep mode

SETUP_RETR (RW) Address: 04h

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
ARD				ARC			
4'b0				4'b11			
RW				RW			

Description of Word

Bit	Value	Symbol	Description
7:4	4'b0	ARD	Auto Retransmit Delay

OM6220 (12 inch) BLE Register Map v0.3

			4'hf	Wait 4000 μ S
		
			4'h1	Wait 500 μ S
			4'h0	Wait 250 μ S
3:0	4'b11	ARC	Auto Retransmit Count	
			4'hf	Up to 15 Re-Transmit on fail of AA
		
			4'h1	Up to 1 Re-Transmit on fail of AA
			4'h0	Re-Transmit disabled

RF_CH (RW) Address: 05h

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Reg_Rf_ch							
0x32							
RW							

Description of Word

Bit	Value	Symbol	Description
8:0	2	Reg_Rf_ch	Sets the frequency channel HS6220 operates on

RF_SETUP (RW) Address: 06h

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
CONT_WAVE	PA_PWR[3]	CAL_DONE	CAL_EN	RF_DR_HIGH	Pa_power		
0	1	0	1	0	3'b000		
RW	RW	RW	RW	RW	RW		

Description of Word

Bit	Value	Symbol	Description
7	0	CONT_WAVE	Enables continuous carrier transmit when high
			0 Disable
			1 Enable
6	1	PA_PWR[3]	PA power select bit 3
5	0	CAL_DONE	Flag for calibration finishing, after CAL_EN set to 1, CAL_DONE will be reset to 0 0 calibration on 1 calibration done

OM6220 (12 inch) BLE Register Map v0.3

4	0	CAL_EN	Calibration enable, 1 for enable; 0 for disable		
3	1	RF_DR_HIGH	Data rate select, 1 for 2Mbps; 0 for 1Mbps, BLE mode should be set to 0		
2:0	3'b010	PA_PWR[2:0]	PA power control, PA_PWR[3:0] with pa_voltage of RF_IVGEN in bank1		
			PA_PWR[3:0]	Pa_voltage(bank1 of RF_IVGEN)	
			1111	0	Output 8dbm,
			1000	0	Output 5 dbm
			0111	1	Output 4dbm,
			0011	0	Output 0 dbm,
			0001	0	Output -6 dbm
			0001	1	Output -12 dbm
			0000	0	Output -32 dbm
			0000	1	Output -43 dbm

STATUS (RW) Address: 07h

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
BANK	RX_DR	TX_DS	SYNC_DS	CE	RX_P_NO		TX_FULL
0	0	0	0	0	2'b11		0
R	RW	RW	RW	R	R		R

Description of Word

Bit	Value	Symbol	Description	
7	0	BANK	Register BANK status	
			1	Register R/W is to register BANK1
			0	Register R/W is to register BANK0
6	0	RX_DR	Data Ready RX FIFO interrupt. Asserted when new data arrives RX FIFO Write 1 to clear bit.	
5	0	TX_DS	Data Sent TX FIFO interrupt. Asserted when packet transmitted on TX. Write 1 to clear bit.	
4	0	SYNC_DS	RX sync detector interrupt, Write 1 to clear bit. If SYNC_DS is asserted it must be cleared to enable further communication.	
3	0	CE	CE state	
2:1	2'b11	RX_P_NO	Data pipe number for the payload available for reading from RX_FIFO	
			11	RX FIFO Empty
			00-10	Data Pipe Number
0	0	TX_FULL	TX FIFO full flag	
			0	Available locations in TX FIFO
			1	TX FIFO full

OM6220 (12 inch) BLE Register Map v0.3

BLE_ACCESS_ADDR (RW) Address: 0Ah

Bit 31	Bit 30	Bit 29	Bit 28	Bit 27	Bit 26	Bit 25	Bit 24
BLE_ACCESS_ADDR							
8'h41							
RW							
Bit 23	Bit 22	Bit 21	Bit 20	Bit 19	Bit 18	Bit 17	Bit 16
BLE_ACCESS_ADDR							
8'h88							
RW							
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
BLE_ACCESS_ADDR							
8'h20							
RW							
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
BLE_ACCESS_ADDR							
8'h46							
RW							

Description of Word

Bit	Value	Symbol	Description
31:0	32'h418 82046	BLE_ACCESS_ ADDR	BLE accessaddress

BLE_TIMER (RW) Address: 0Bh

Bit 31	Bit 30	Bit 29	Bit 28	Bit 27	Bit 26	Bit 25	Bit 24
Ble_timer[31:24]							
8'h00							
RW							
Bit 23	Bit 22	Bit 21	Bit 20	Bit 19	Bit 18	Bit 17	Bit 16
Ble_timer[23:16]							
8'h00							
RW							
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
Ble_timer[15:8]							
8'h00							
RW							
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0

OM6220 (12 inch) BLE Register Map v0.3

Ble_timer[7:0]
8'hC2
RW

Description of Word

Bit	Value	Symbol	Description
31:0	32'h000 000c2	Ble_timer	BLE timer

BLE_CTL (RW) Address: 0Ch

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
event_abort	md_dsb	nesn_sn_dsb	infiniterx	FORMAT			
1	1	0	0	4'h3			
RW	RW	RW	RW	RW			

Description of Word

Bit	Value	Symbol	Description
7	1	event_abort	Event abort by software
6	1	md_dsb	Md disable
5	0	nesn_sn_dsb	Nesn and sn disable
4	0	infiniterx	Infinite RX
3:0-	4'h3	FORMAT	0011 for BLE broadcast 0101 for BLE connection 0110 for BLE normal scan mode 0111 for BLE white list filter mode 1001 for BLE TX test 1011 for BLE RX test

CLKN_SYNC Address: 0Dh

Bit 31	Bit 30	Bit 29	Bit 28	Bit 27	Bit 26	Bit 25	Bit 24
CLKN_SYNC[31:24]							
8'h00							
R							
Bit 23	Bit 22	Bit 21	Bit 20	Bit 19	Bit 18	Bit 17	Bit 16
CLKN_SYNC [23:16]							
8'h00							
R							

OM6220 (12 inch) BLE Register Map v0.3

Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
CLKN_SYNC [15:8]							
8'h00							
R							
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
CLKN_SYNC[7:0]							
8'h00							
R							

Description of Word

Bit	Value	Symbol	Description
31:0	32'h00000000	CLKN_SYNC	Latch 32k timer counter when sync detect

TX_ADVA(RW) Address: 10h

Bit47	Bit46	Bit45	Bit 44	Bit43	Bit 42	Bit41	Bit 40
TX_ADVA							
8'h70							
RW							
Bit 39	Bit 38	Bit 37	Bit 36	Bit 35	Bit 34	Bit 33	Bit 32
TX_ADVA							
8'h70							
RW							
Bit 31	Bit 30	Bit 29	Bit 28	Bit 27	Bit 26	Bit 25	Bit 24
TX_ADVA							
8'h41							
RW							
Bit 23	Bit 22	Bit 21	Bit 20	Bit 19	Bit 18	Bit 17	Bit 16
TX_ADVA							
8'h88							
RW							
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
TX_ADVA							
8'h20							
RW							
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
TX_ADVA							
8'h46							
RW							

OM6220 (12 inch) BLE Register Map v0.3

Description of Word

Bit	Value	Symbol	Description
47:0	48'h707 0418820 46	TX_ADVA	BLE device address

TX HEADER (RW) Address: 11h

Bit 15	Bit 14	Bit 13	Bit 12	Bit RW11	Bit 10	Bit 9	Bit 8
length							
0							
RW							
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Rxadd	Txadd	RFU		TYPE			
0	0	0		0			
RW	RW	RW		RW			

Description of Word

Bit	Value	Symbol	Description
15:8	2'b00	length	Payload length
7	0	Rxadd	0 for device RX address 1 for random address
6	0	Txadd	0 for device TX address 1 for random address
5:4	2'h0	RFU	Reserved
3:0	4'h0	TYPE	0000 ADV_IND 0001 ADV_DIRECT_IND 0010 ADV_NONCONN_IND 0100 SCAN_RSP 0110 ADV_SCAN_IND 0111-1111 RESERVED

BLE_CRC_INIT (RW) Address: 12h

Bit 23	Bit 22	Bit 21	Bit 20	Bit 19	Bit 18	Bit 17	Bit 16
Ble_crc_init[23:16]							
0							

OM6220 (12 inch) BLE Register Map v0.3

RW							
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
Ble_crc_init[15:8]							
0							
RW							
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Ble_crc_init[7:0]							
0							
RW							

Description of Word

Bit	Value	Symbol	Description
23:0	24'h0	Ble_crc_init	

BLE_SETUP_DELAY (RW) Address: 13h

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Ble_tx_delay[3:0]				Ble_rx_delay[3:0]			
0				0			
RW				RW			

Description of Word

Bit	Value	Symbol	Description
7:4	0	Ble_tx_delay	0000 no delay 0001 1us delay 0010 2us delay 0011 3us delay 0100 4us delay 0101 5us delay 0110 6us delay 0111 7us delay 1000 0us delay 1001 -1us delay 1010 -2us delay 1011 -3us delay 1100 -4us delay 1101 -5us delay 1110 -6us delay 1111 -7us delay

OM6220 (12 inch) BLE Register Map v0.3

3:0	0	Ble_rx_delay	0000 no delay 0001 1us delay 0010 2us delay 0011 3us delay 0100 4us delay 0101 5us delay 0110 6us delay 0111 7us delay 1000 0us delay 1001 -1us delay 1010 -2us delay 1011 -3us delay 1100 -4us delay 1101 -5us delay 1110 -6us delay 1111 -7us delay
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RX HEADER(R) Address: 14h

Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
length							
0							
R							
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Rxadd	Txadd	RFU		TYPE			
0	0	0		0			
R	R	R		R			

Description of Word

Bit	Value	Symbol	Description
15:8	8'h00	length	Payload length
7	0	Rxadd	0 for device RX address 1 for random address
6	0	Txadd	0 for device TX address 1 for random address
5:4	2'h0	RFU	Reserved
3:0	4'h0	TYPE	0011 SCAN_REQ 0101 CONNECT_REQ 0111-1111 RESERVED

OM6220 (12 inch) BLE Register Map v0.3

RX_ADDA(R) Address: 15h

Bit47	Bit46	Bit45	Bit 44	Bit43	Bit 42	Bit41	Bit 40
RX_ADDA							
8'h0							
R							
Bit 39	Bit 38	Bit 37	Bit 36	Bit 35	Bit 34	Bit 33	Bit 32
RX_ADDA							
8'h0							
R							
Bit 31	Bit 30	Bit 29	Bit 28	Bit 27	Bit 26	Bit 25	Bit 24
RX_ADDA							
8'h0							
R							
Bit 23	Bit 22	Bit 21	Bit 20	Bit 19	Bit 18	Bit 17	Bit 16
RX_ADDA							
8'h0							
R							
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
RX_ADDA							
8'h0							
R							
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
RX_ADDA							
8'h0							
R							

Description of Word

Bit	Value	Symbol	Description
47:0	48'h0	RX_ADDA	Peer device address

STATUS_EXT (RW) Address: 16h

Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
Reserved	lastempty	snerr	nesnerr	crcerr	lenerr	typeerr	synerr
0	0	0	0	0	0	0	0
R	R	R	R	R	R	R	R
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
EVT_DS	RX_DR	TX_DS	SYNC_DS	Rx_timer_out	Rtc_timer_int	rx_afull	tx_aempty

OM6220 (12 inch) BLE Register Map v0.3

0	0	0	0	0	0	0	0
R	R	R	R	R	R	R	R

Description of Word

Bit	Value	Symbol	Description
15	0	Reserved	
14	0	lastempty	
13	0	snerr	
12	0	nesnerr	
11	0	crcerr	
10	0	lenerr	
9	0	typeerr	
8	0	synerr	
7	0	EVT_DS	
6	0	RX_DR	
5	0	TX_DS	
4	0	SYNC_DS	
3	0	Rx_timer_out	
2	0	Rtc_timer_int	
1	0	rx_afull	
0	0	tx_aempty	

FIFO_STATUS (RW) Address: 17h

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Reserved	TX_REUSE_PL	TX_FULL	TX_EMPTY	Reserved		RX_FULL	RX_EMPTY
0	0	0	1	0		0	1
RW	R	R	R	RW		R	R

Description of Word

Bit	Value	Symbol	Description
7	0	Reserved	
6	0	TX_REUSE_PL	TX REUSE flag.
			1 Tx data reused
			0 Tx data not reused
5	0	TX_FULL	TX FIFO full flag.
			1 TX FIFO full
			0 Available locations in TX FIFO

OM6220 (12 inch) BLE Register Map v0.3

4	1	TX_EMPTY	TX FIFO empty flag.	
			1	TX FIFO empty
			0	Data in TX FIFO
3:2	2'b00	Reserved	Only '00' allowed	
			0	Keep the current value
			1	Reset to default values
1	0	RX_FULL	RX FIFO full flag.	
			1	RX FIFO full
			0	Available locations in RX FIFO
0	1	RX_EMPTY	RX FIFO empty flag.	
			1	RX FIFO empty
			0	Data in RX FIFO

CONFIG_EXT (RW) Address: 18h

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
clk_rx_en	ce_before_fifo	fifo_len_ctl	Msk_rx_time_out	msk_rx_afull	msk_tx_aempty	Msk_rtc_timer_int	ble_timer_on
0	0	0	1	1	1	1	0
RW	RW	RW	RW	RW	RW	RW	RW

Description of Word

Bit	Value	Symbol	Description
7	0	clk_rx_en	RX clock enable
6	0	ce_before_fifo	
5	0	fifo_len_ctl	Fifo length control when payload more than 32 bytes
4	1	Msk_rx_time_out	Mask RX time out
3	1	msk_rx_afull	
2	1	msk_tx_aempty	
1	1	Msk_rtc_timer_int	Mask rtc timer interrupt
0	0	ble_timer_on	Blertc timer enable

RTC_TIMER_MODE (RW) Address: 19h

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Reserved						mode	
6'h0						2'h0	
RW						RW	

Description of Word

OM6220 (12 inch) BLE Register Map v0.3

Bit	Value	Symbol	Description
7:2	6'h0	Reserved	Reserved
1:0	2'h0	rtc_mode	2'b00: set absolute value; read rtc timer value, soft first send lock cmd and wait lock done 2'b10: set delta value; soft need not read rtc timer value 2'bx1: set absolute value; read rtc timer value, soft need not wait

WHITE_LIST_RXADDR_1 (RW) Address: 1Ah

Bit47	Bit46	Bit45	Bit 44	Bit43	Bit 42	Bit41	Bit 40
WHITE_LIST_RXADDR_1							
8'h0							
RW							
Bit 39	Bit 38	Bit 37	Bit 36	Bit 35	Bit 34	Bit 33	Bit 32
WHITE_LIST_RXADDR_1							
8'h0							
RW							
Bit 31	Bit 30	Bit 29	Bit 28	Bit 27	Bit 26	Bit 25	Bit 24
WHITE_LIST_RXADDR_1							
8'h0							
RW							
Bit 23	Bit 22	Bit 21	Bit 20	Bit 19	Bit 18	Bit 17	Bit 16
WHITE_LIST_RXADDR_1							
8'h0							
RW							
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
WHITE_LIST_RXADDR_1							
8'h0							
RW							
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
WHITE_LIST_RXADDR_1							
8'h0							
RW							

Description of Word

Bit	Value	Symbol	Description
47:0	48'h0	WHITE_LIST_RXADDR_1	

OM6220 (12 inch) BLE Register Map v0.3

WHITE_LIST_RXADDR_2 (RW) Address: 1Bh

Bit47	Bit46	Bit45	Bit 44	Bit43	Bit 42	Bit41	Bit 40
WHITE_LIST_RXADDR_2							
8'h0							
RW							
Bit 39	Bit 38	Bit 37	Bit 36	Bit 35	Bit 34	Bit 33	Bit 32
WHITE_LIST_RXADDR_2							
8'h0							
RW							
Bit 31	Bit 30	Bit 29	Bit 28	Bit 27	Bit 26	Bit 25	Bit 24
WHITE_LIST_RXADDR_2							
8'h0							
RW							
Bit 23	Bit 22	Bit 21	Bit 20	Bit 19	Bit 18	Bit 17	Bit 16
WHITE_LIST_RXADDR_2							
8'h0							
RW							
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
WHITE_LIST_RXADDR_2							
8'h0							
RW							
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
WHITE_LIST_RXADDR_2							
8'h0							
RW							

Description of Word

Bit	Value	Symbol	Description
47:0	48'h0	WHITE_LIST_RXADDR_2	

DYNPD (RW) Address: 1Ch

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Reg_output	Reg_output_en	Bypass_io	Xn_en	Spi4_en	DPL_P2	DPL_P1	DPL_P0
0	0	1	0	0	0	0	0
RW		RW	RW	RW	RW	RW	RW

OM6220 (12 inch) BLE Register Map v0.3

Description of Word

Bit	Value	Symbol	Description
7	0	Reg_output	Register control IRQ output
6	0	Reg_output_en	Register control IRQ output enable
5	1	Bypass_io	Bypass IRQ and MOSI, after HS6220 power up, Bypass_io should be set 0
4	0	Xn_en	Xn mode enable
3	0	Spi4_en	4-wire SPI enable
2	0	DPL_P2	Enable dynamic payload length data pipe 2. (Requires EN_DPL and ENAA_P2)
1	0	DPL_P1	Enable dynamic payload length data pipe 1. (Requires EN_DPL and ENAA_P1)
0	0	DPL_P0	Enable dynamic payload length data pipe 0. (Requires EN_DPL and ENAA_P0)

FEATURE (RW) Address: 1Dh

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Long_packet_en	Ble_en	Soft_rst	BP_GAU	Vco_amp_tx_mux	EN_DPL	EN_ACK_PA Y	EN_DYN_A CK
0	0	0	1	0	0	0	0
RW	RW	RW	RW	RW	RW	RW	RW

Description of Word

Bit	Value	Symbol	Description
7	0	Long_packet_en	Long packet mode enable
6	0	Ble_en	BLE mode enable
5	0	Soft_rst	Software reset
4	1	BP_GAU	Bypass Gaussian filter, BLE mode should not bypass Gaussian filter
3	0	Vco_amp_tx_mux	Vco_amp_tx_mux=0, vco_amp_ctr[3:0] (VCO amplitude control bit) of RX and TX are both from calibration fsm; Vco_amp_tx_mux=1, vco_amp_ctr[3:0] of RX is from calibration fsm, vco_amp_ctr[3:0] of TX is fixed to 0x0c;
2	0	EN_DPL	Enables Dynamic Payload Length
1	0	EN_ACK_PAY	Enables Payload with ACK
0	0	EN_DYN_ACK	Enables the W_TX_PAYLOAD_NOACK command

SETUP_VALUE (RW) Address: 1Eh

Bit23	Bit 22	Bit 21	Bit 20	Bit 19	Bit 18	Bit17	Bit16
REG_LNA_WAIT							
8'h00							
RW							

OM6220 (12 inch) BLE Register Map v0.3

Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
REG_MBG_WAIT							
8'h06							
RW							
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
RX_TM_CNT							
8'h80							
RW							

Description of Word

Bit	Value	Symbol	Description
23:16	8'h00	REG_LNA_WAIT	Lna wait counter
			8'hff 255 cycle
		
			1 1 cycle
			0 0 cycle
15:8	8'h06	REG_MBG_WAIT	Main bandgap wait counter
			8'hff 255us
		
			1 1 us
			0 0 us
7:0	8'h80	RX_TM_CNT	Rx timeout counter.
			8'hff 255us
		
			1 1 us
			0 0 us

PRE_GURD (RW) Address: 1Fh

Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
SPARE_REG[7:0]							
0							
RW							
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
TAIL_CTL			GRD_EN	GRD_CNT			
011			1	4'h7			
RW			RW	RW			

Description of Word

OM6220 (12 inch) BLE Register Map v0.3

Bit	Value	Symbol	Description
15:8	0	SPARE_REG	Reserved register
7:5	3'h3	TAIL_CTL	Number of repeat bit after the CRC
			7 7 repeat tail
		
			1 1 repeat tail
			0 0 No repeat tail
4	1	GRD_EN	Pre-Guard enable
3:0	4'h7	GRD_CNT	Number of Pre-Guard bit before preamble
			4'hf 16 bitpre_guard
		
			1 2 bitpre_guard
			0 1 bitpre_guard

BANK1

LINE (R) Address: 00h

Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
CID							
8'h06							
R							
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
CID							
8'h00							
R							

Description of Word

Bit	Value	Symbol	Description
15:0	16'h060 0	CID	Chip ID

PLL_CTL0 (RW) Address: 01h

Bit 31	Bit 30	Bit 29	Bit 28	Bit 27	Bit 26	Bit 25	Bit 24
SDM_EN	PLL_dac_en	PLL_RSTN_	CRY_PD_RE	CRY_PD_M	Reserved	PLL_FOFFSET_SEL	

OM6220 (12 inch) BLE Register Map v0.3

		PFD	G	N			
1	1	1	0	0	0	01	
RW	RW	RW	RW	RW	RW	RW	
Bit 23	Bit 22	Bit 21	Bit 20	Bit 19	Bit 18	Bit 17	Bit 16
DAC_CAL-E N_REG	DAC_CAL_ EN_MN	DAC_CALM ODE_REG	BP_RC_BP	DOC_CAL_ EN_REG	DOC_CAL_ EN_MN_	DOC_DAC_ MN	I_Q_RVS
0	0	0	1	0	0	0	0
RW	RW	RW	RW	RW	RW	RW	RW
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
PLL_TEST_ EN	pd_pkdet_reg	pd_pkdet_mn	PD_PLL_RE G	PD_PLL_M N	PLL_TX_EN _REG	PLL_TX_EN _MN	BYPASS_VC O_RES
0	0	0	0	0	0	0	0
RW	RW	RW	RW	RW	RW	RW	RW
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
SDM_DITH_ IN	SDM_DITH_ EN	DAC_RANG E_MN	SYNC_DET_ DIS	AFC_EN_RE G	AFC_EN_M N	CTUNING_ MN	FTUNING_ MN
0	1	0	0	0	0	0	0
RW	RW	RW	RW	RW	RW	RW	RW

Description of Word

Bit	Value	Symbol	Description
31	1	SDM_EN	SDM enable
			1 Enable the SDM
			0 Disable the SDM
30	1	PLL_dac_en	Output DAC_EN to analog
			0 Output 0
			1 Output 1
29	1	PLL_RSTN_PFD	PLL_RSTN_PFD control
			1 Set 1
			0 Set 0
28	0	CRY_PD_REG	Control the Power down of Crystal
			1 Power down the crystal
			0 Power up the crystal
27	0	CRY_PD_MN	Select the source of crystal power down
			1 CRY_PD = CRY_PD_REG
			0 CRY_PD = CRY_PD_FSM
26	0	Reserved	
25:24	01	PLL_FOFFSET_SEL	PLL_FOFFSET_SEL control
23	0	DAC_CAL_EN	DAC calibration enable

OM6220 (12 inch) BLE Register Map v0.3

		_REG	1	Enable the DAC calibration
			0	Disable the DAC calibration
22	0	DAC_CAL_EN_MN	Select the source of DAC_CAL_EN	
			1	DAC_CAL_EN = DAC_CAL_REG
			0	DAC_CAL_EN = DAC_CAL_FSM
21	0	DAC_CALMO_DE_REG	Control the VCO gain	
			1	Normal gain
			0	5 times of the normal gain
20	1	BP_RC_BP	Bypass RC_BP phase in the FSM	
			1	Bypass RC_BP phase
			0	No bypass RC_BP phase
19	0	DOC_CAL_EN_REG	Enable the DOC calibration	
			1	Enable the DOC calibration
			0	Disable the DOC calibration
18	0	DOC_CAL_EN_MN	Select the source of DOC_CAL_EN source	
			1	DOC_CAL_EN = DOC_CAL_EN_REG
			0	DOC_CAL_EN = DOC_CAL_EN_FSM
17	0	DOC_DAC_MN	Select the source of DOC source	
			1	DOC_DACI = DOC_DACI_REG DOC_DACQ = DOC_DACQ_REG
			0	DOC_DACI = DOC_DACI_FSM DOC_DACQ = DOC_DACQ_FSM
16	0	I_q_rvs	Only 0 allowed	
			0	Keep the current value
			1	Reset to default values
15	0	PLL_TEST_EN	Enable the PLL in test mode	
			1	PLL A_CNT and B_CNT come from register
			0	PLL A_CNT and B_CNT come from SDM
14	0	pd_pkdet_reg	Manual mode of pd_pkdet register	
13	0	pd_pkdet_mn	Manual mode of pd_pkdet enable	
12	0	PD_PLL_REG	PLL power down control	
			1	Power down PLL
			0	Power up PLL
11	0	PD_PLL_MN	Select the source of PLL Power down	
			1	PD_PLL = PD_PLL_REG
			0	PD_PLL = PD_PLL_FSM
10	0	PLL_TX_EN_REG	PLL TX mode	
			1	PLL in TX mode
			0	PLL in RX mode
9	0	PLL_TX_EN_MN	Select the source of PLL_TX_EN	
			1	PLL_TX_EN = PLL_TX_EN_REG

OM6220 (12 inch) BLE Register Map v0.3

			0	PLL_TX_EN = PLL_TX_EN_FSM
8	0	BYPASS_VCO_RES	Bypass VCO tail resistor for max amplitude	
7	0	SDM_DITH_IN	SDM dither in value	
			1	Value 1
			0	Value 0
6	0	SDM_DITH_EN	SDM dither enable	
			1	Enable the SDM dither
			0	Disable the SDM dither
5	0	DAC_RANG_MN	Select the source of DAC_RANG	
			1	DAC_RANG = DAC_RANG_REG
			0	DAC_RANG = DAC_RANG_FSM
4	0	SYNC_DET_DS	Disable AGC when sync detected	
3	0	AFC_EN_REG	AFC enable	
			1	Enable the AFC
			0	Disable the AFC
2	0	AFC_EN_MN	Select the source of AFC_EN	
			1	AFC_EN = AFC_EN_REG
			0	AFC_EN = AFC_EN_FSM
1	0	CTUNING_MN	Select the source of CTUNING	
			1	CTUNING = CTUNING_REG
			0	CTUNING = CTUNING_FSM
0	0	FTUNING_MN	Select the source of FTUNING	
			1	FTUNING = FTUNING_REG
			0	FTUNING = FTUNING_FSM

PLL_CTL1 (RW) Address: 02h

Bit 23	Bit 22	Bit 21	Bit 20	Bit 19	Bit 18	Bit 17	Bit 16
REG_TX_PA_WAIT							
8'h10							
RW							
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
Tx_PLL_WAIT							
8'h42							
RW							
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
REG_AFC_WAIT							
8'h00							
RW							

OM6220 (12 inch) BLE Register Map v0.3

Description of Word

Bit	Value	Symbol	Description
23:16	8'h10	REG_TX_PA_WAIT	The time between power up PA to transmit data
			8'hff 255 cycle
			...
			1 1 cycle
			0 0 cycle
15:8	8'h42	Tx_PLL_WAIT	PLL lock wait time in Tx mode
			8'hff 255 us
			...
			1 1 us
			0 0 us
7:0	8'h00	REG_AFC_WAIT	The time between RC done and AFC start
			8'hff 255 us
			...
			1 1 us
			0 0 us

CAL_CTL (RW) Address: 03h

Bit 31	Bit 30	Bit 29	Bit 28	Bit 27	Bit 26	Bit 25	Bit 24
Rx_pll_wait							
8'h28							
RW							
Bit 23	Bit 22	Bit 21	Bit 20	Bit 19	Bit 18	Bit 17	Bit 16
Reserved	afc_w_sel		Reserved	Bp_dc	Bp_dac	Bp_afc	Bp_rc
0	11		1	0	0	0	0
RW	RW		RW	RW	RW	RW	RW
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
bp_vco_ldo	Pseudo_rnd	Bp_rx_addr	bp_vco_amp	Bp_cp_diox	Vco_ldo_cal_reg		
0	0	0	0	1	0		
WR	RW	RW	RW	RW			
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Vco_ldo_cal_mn	Rc_cal_ctr_mn	PLL_rst_cnt	Rc_cal_ctl_reg				
0	0	1	0				
RW	RW	RW	RW				

Description of Word

OM6220 (12 inch) BLE Register Map v0.3

Bit	Value	Symbol	Description
31:24	8'h28	Rx_pll_wait	PLL lock wait time in rx mode Force_cal : before every transmit and receive do calibration
23	0	Reserved	
22:21	11	afc_w_sel	Select the AFC wait reference counter
			0 512
			1 255
			2 127
			3 63
20	1	Reserved	
19	0	Bp_dc	Bypass DC calibration phase
			0 Disable
			1 Enable
18	0	Bp_dac	Bypass DAC calibration phase
			0 Disable
			1 Enable
17	0	Bp_afc	Bypass AFC calibration phase
			0 Disable
			1 Enable
16	0	Bp_rc	Bypass RC calibration phase
			0 Disable
			1 Enable
15	0	bp_vco_ldo	Bypass VCO_LDO calibration phase
			0 Disable
			1 Enable
14	0	Psudo_rnd	Transmit Random data
			0 Disable
			1 Enable
13	0	Bp_rx_addr	Bypass the RX_ADDR phase in the main FSM
12	0	bp_vco_amp	Bypass VCO amplitude calibration phase
			0 Disable
			1 Enable
11	1	Bp_cp_diox	Bpassdio
			0 Disable
			1 Enable
10:8	0	Vco_ldo_cal_re g	Vco_ldomamual set value
7	0	Vco_ldo_cal_m n	Vcoldo calibration select
			0 Vco_ldo_cal = vco_ldo_cal_fsm
			1 Vco_ldo_cal = vco_ldo_cal_reg

OM6220 (12 inch) BLE Register Map v0.3

6	0	Rc_cal_ctr_mn	Rc calibration select	
			0	Rc_cal_ctr = rc_cal_ctr_fsm
			1	Rc_cal_ctr = rc_cal_ctr_reg
5	1	Pll_rst_cnt	Pll_rst_cnt	
			0	Output 0
			1	Output 1
4:0	0	Rc_cal_ctr_reg	Rc calibration register	

STATUS (RW) Address: 07h

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
BANK	RX_DR	TX_DS	SYNC_DS	CE	RX_P_NO		TX_FULL
0	0	0	0	0	2'b11		0
R	RW	RW	RW	R	R		R

Description of Word

Bit	Value	Symbol	Description
7	0	BANK	Register BANK status
			1 Register R/W is to register BANK1
			0 Register R/W is to register BANK0
6	0	RX_DR	Data Ready RX FIFO interrupt. Asserted when new data arrives RX FIFO Write 1 to clear bit.
5	0	TX_DS	Data Sent TX FIFO interrupt. Asserted when packet transmitted on TX. Write 1 to clear bit.
4	0	SYNC_DS	RX sync detector interrupt, Write 1 to clear bit. If SYNC_DS is asserted it must be cleared to enable further communication.
3	0	CE	CE state
2:1	2'b11	RX_P_NO	Data pipe number for the payload available for reading from RX_FIFO
			11 RX FIFO Empty
			00-10 Data Pipe Number
0	0	TX_FULL	TX FIFO full flag
			0 Available locations in TX FIFO
			1 TX FIFO full

STATE (RW) Address: 08h

Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
Reserved				CAL_ST_CS			
0				0			
RW				R			
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0

OM6220 (12 inch) BLE Register Map v0.3

Reserved	STATE_CS
0	0
RW	R

Description of Word

Bit	Value	Symbol	Description
15:12	0	Reserved	
11:8	4'b0	Cal_st_cs	Describe the state of calibration state machine
7:6	0	Reserved	Only 0 allowed
			0 Keep the current value
			1 Reset to default values
5:0	6'b0	State_cs	Describe the state of main state machine

CHAN (RW) Address: 09h

Bit 31	Bit 30	Bit 29	Bit 28	Bit 27	Bit 26	Bit 25	Bit 24
Chan_mn	Reserved	CHAN_FRAC_REG					
0	0	0					
RW	RW	RW					
Bit 23	Bit 22	Bit 21	Bit 20	Bit 19	Bit 18	Bit 17	Bit 16
CHAN_FRAC_REG							
0							
RW							
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
CHAN_FRAC_REG							CHAN_INT_REG
0							0
RW							RW
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
CHAN_INT_REG							
0							
RW							

Description of Word

Bit	Value	Symbol	Description
31	1'b0	Chan_mn	Channel int and frac part select
			0 Come from the calculation from rf_ch

OM6220 (12 inch) BLE Register Map v0.3

			1	Come from register
30	2'b0	Reserved	Only 0 allowed	
			0	Keep the current value
			1	Reset to default values
29:9	0	CHAN_FRAC_REG	PLL frequency fragment pat	
8:0	0	CHAN_INT_REG	PLL frequency integer pat	

FDEV (RW) Address: 0ch

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Reserved	FDEV						
0	0x20						
R	RW						

Description of Word

Bit	Value	Symbol	Description
7	0	Reserved	
6:0	7'h20	FDEV	The max offset of the frequency

DAC_RANGE (RW) Address: 0dh

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Reserved	DAC_RANGE_REG						
0	0						
R	RW						

Description of Word

Bit	Value	Symbol	Description
7:6	0	Reserved	Only 0 allowed
			0 Keep the current value
			1 Reset to default values
5:0	6'b0	DAC_RANGE_REG	DAC calibration Range control

OM6220 (12 inch) BLE Register Map v0.3

CTUNING (RW) Address: 0fh

Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
Reserved			CTUNING_REG_RX				
0			0				
R			RW				
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Reserved			CTUNING_REG_TX				
0			0				
R			RW				

Description of Word

Bit	Value	Symbol	Description
15:13	0	Reserved	Only 0 allowed
			0 Keep the current value
			1 Reset to default values
12:8	6'b0	CTUNING_REG_RX	AFC coarse tuning register control
7:5	0	Reserved	Only 0 allowed
			0 Keep the current value
			1 Reset to default values
4:0	6'b0	CTUNING_REG_TX	AFC coarse tuning register control

FTUNING (RW) Address: 10h

Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
Reserved					FTUNING_REG_RX		
0					0		
R					RW		
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Reserved					FTUNING_REG_TX		
0					0		
R					RW		

Description of Word

Bit	Value	Symbol	Description
15:11	0	Reserved	Only 0 allowed

OM6220 (12 inch) BLE Register Map v0.3

			0	Keep the current value
			1	Reset to default values
10:8	3'b0	FTUNING_RE G_RX	AFC fine tuning register control	
7:3	0	Reserved	Only 0 allowed	
			0	Keep the current value
			1	Reset to default values
2:0	3'b0	FTUNING_RE G_TX	AFC fine tuning register control	

RX_CTRL (RW) Address: 11h

Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
sbe_max_th			xcorr_th[6:2]				
0	0	1	1	0	1	0	0
RW	RW	RW	RW	RW	RW	RW	RW
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
xcorr_th[1:0]		en_dc_removal	en_sbe	reserved		h_idx	
0	0	1	1	0	0	1	0
RW	RW	RW	RW	RW	RW	RW	RW

Description of Word

Bit	Value	Symbol	Description
15:13	3'b001	sbe_max_th	Sync address error tolerance
12:6	7'h50	xcorr_th	Sync threshold
5	1	en_dc_removal	Dc remove enable
4	1	en_sbe	Sbe enable
3:2	1	Reserved	
1:0	2'b10	h_idx	modulation index: when 1: 0.32, when 2: 0.50;

FAGC_CTRL_1 (RW) Address: 13h

Bit 31	Bit 30	Bit 29	Bit 28	Bit 27	Bit 26	Bit 25	Bit 24
reserved			pkdet_vrefc			pkdet_vref2c	
0			3'h2			1	

OM6220 (12 inch) BLE Register Map v0.3

RW			RW			RW	
Bit 23	Bit 22	Bit 21	Bit 20	Bit 19	Bit 18	Bit 17	Bit 16
reserved	agc_dpd_lo_thr[10:4]						
0	7'h5						
RW			RW				
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
agc_dpd_lo_thr[3:0]				Reserved			VCO_AMP_M
4'ha				0			0
RW				RW			RW
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
VCO_AMP_CTL				VCO_PKREF_CTL			
4'h0				4'h1			
RW				RW			

Description of Word

Bit	Value	Symbol	Description
31:29	0	reserved	
28:26	3'b010	pkdet_vrefc	Pkdetvrefc value
25:24	2'b01	pkdet_vref2c	Pkdet vref2c value
23	0	reserved	
22:12	11'h05a	agc_dpd_lo_thr	Filter gain low threshold, default 90
11:9	0	reserved	
8	0	VCO_AMP_M N	Manual mode of VCO amplitude calibration
7:4	4'h0	VCO_AMP_CTL	VCO amplitude control
3:0	4'h1	VCO_PKREF_CTL	VCO amplitude calibration reference

DOC_DACI (RW) Address: 1ah

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Reserved	doc_daci						
0	0						
RW	RW						

Description of Word

Bit	Value	Symbol	Description
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OM6220 (12 inch) BLE Register Map v0.3

7	0	Reserved	Only 0 allowed	
			0	Keep the current value
			1	Reset to default values
6:0	0	doc_daci	Doc calibrationdaci value	

DOC_DACQ (RW) Address: 1bh

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Reserved	doc_dacq						
0	0						
RW	RW						

Description of Word

Bit	Value	Symbol	Description	
7	0	Reserved	Only 0 allowed	
			0	Keep the current value
			1	Reset to default values
6:0	0	doc_dacq	Doc calibration dacq value	

AGC_CTRL (RW) Address: 1ch

Bit 23	Bit 22	Bit 21	Bit 20	Bit 19	Bit 18	Bit 17	Bit 16
test_pat_en	adp_samp_mode			agc_samp_mode		agc_dpd_mode	agc_dpd_thr_db[5]
0	0	0	0	1	0	0	1
RW	RW	RW	RW	RW	RW	RW	RW
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
agc_dpd_thr_db[4:0]				agc_dpd_thr[10:8]			
1	0	1	1	0	0	1	0
RW	RW	RW	RW	RW	RW	RW	RW
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
agc_dpd_thr[7:0]							
1	1	0	0	1	1	1	1
RW	RW	RW	RW	RW	RW	RW	RW

Description of Word

Bit	Value	Symbol	Description
23	0	test_pat_en	Test pattern enable

OM6220 (12 inch) BLE Register Map v0.3

22:20	0	adp_samp_mode	Number of clock cycles delay between every two apd detection: When 0, 0 cycles When 1, 2 cycles When 2, 4 cycles When 3, 8 cycles When 4, 16 cycles When 5, 32 cycles
19:18	2	agc_samp_mode	The number of shift registers which are required for Dpd calculation. When 0, 2 registers When 1, 4 registers When 2, 8 registers When 3, 16 registers
17	0	agc_dpd_mode	'0': mean of sample amplitudes, '1': max of sample amplitudes;
16:11	6'h36	agc_dpd_thr_db	dB value of agc_dpd_thr minus 3 dB, default 54
10:0	11'h2cf	agc_dpd_thr	Filter gain high threshold, default 719

AGC_GAIN (RW) Address: 1dh

Bit 31	Bit 30	Bit 29	Bit 28	Bit 27	Bit 26	Bit 25	Bit 24
agc_gain_mn	apd_clr_cnt_th					apd_det_cnt_th[4:3]	
0	0	0	1	1	1	0	0
RW	RW	RW	RW	RW	RW	RW	RW
Bit 23	Bit 22	Bit 21	Bit 20	Bit 19	Bit 18	Bit 17	Bit 16
apd_det_cnt_th[2:0]			dpd_clr_cnt_th[5:1]				
1	1	1	0	1	0	1	1
RW	RW	RW	RW	RW	RW	RW	RW
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
dpd_clr_cnt_th[0]	reserved		Agc_apd_state_reg[1:0]		Agc_dpd_state_reg[2:0]		
1	1	0	0	0	0	0	1
RW	RW	RW	RW	RW	RW	RW	RW
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Agc_dpd_state_reg[10:3]							
0	0	0	0	0	0	0	1
RW	RW	RW	RW	RW	RW	RW	RW

Description of Word

Bit	Value	Symbol	Description
31	0	agc_gain_mn	Agc output gain is get from software or hardware calculation
			1 From software

OM6220 (12 inch) BLE Register Map v0.3

			0	From hardware
30:26	5'h7	apd_clr_cnt_th [4:0]	Analog Gsw+Gsetl time interval	
25:21	5'h7	apd_det_cnt_th [4:0]	Apd detection time interval	
20:15	6'h17	dpd_clr_cnt_th [5:0]	DigitalGsw+Gsetl time interval, and add Dpd detection time interval	
14:13	2'b10	reserved		
12:11	0	Agc_apd_state_r eg	When agc_gain_mn is 1, the value read from this register is the Lna gain given by the software. When agc_gain_mn is 0, the value read from this register is the Lna gain calculated from the hardware module	
10:0	3'b101	Agc_dpd_state_ reg	When agc_gain_mn is 1, the value read from this register is the filter gain given by the software. When agc_gain_mn is 0, the value read from this register is the filter gain calculated from the hardware module	

RF_IVGEN (RW) Address: 1eh

Bit23	Bit 22	Bit 21	Bit 20	Bit19	Bit 18	Bit 17	Bit16
Calib_rx_reg	Tx_0_1_rvs	Pd_lna_reg	Pd_lna_mn	Pd_pa_reg	Pd_pa_mn	Tia_lobias	
1	0	0	0	0	0	0	1
RW	RW	RW	RW	RW	RW	RW	RW
Bit 15	Bit 14	Bit13	Bit12	Bit 11	Bit 10	Bit 9	Bit 8
Pd_adc_ldo_re g	Pd_adc_ldo_m n	Pd_mix_reg	Pd_mix_mn	Bm_filter[1:0]		Bm_lna	
0	0	0	0	01		00	
RW	RW	RW	RW	RW		RW	
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Pa_voltage	Pd_xtal_reg	Pd_xtal_mn	Xtal_cc				
0	0	0	1	1	1	1	1
RW	RW	RW	RW	RW	RW	RW	RW

Description of Word

Bit	Value	Symbol	Description
23	1	Calib_rx_reg	Manual calibration TX/RX select
			1 Manual calibration for RX
			0 Manual calibration for TX
22	0	Tx_0_1_rvs	TX 0/1 reverse
			1 Reverse the 0/1 when transmit
			0 Not reverse
21	0	Pd_lna_reg	Pd_lna manual value

OM6220 (12 inch) BLE Register Map v0.3

20	0	Pd_lna_mn	Pd_lna manual select	
			1	from register
			0	From FSM
19	0	Pd_pa_reg	Pd_pa manual value	
18	0	Pd_pa_mn	Pd_pa manual select	
			1	from register
			0	From FSM
17:16	1	Tia_lobias	Output to analogue	
15	0	Pd_adc_ldo_reg	Pd_adc_ldo manual value	
14	0	Pd_adc_ldo_mn	Pd_adc_ldo manual select	
			1	from register
			0	From FSM
13	0	Pd_mix_reg	Pd_mix manual value	
12	0	Pd_mix_mn	Pd_mix manual select	
			1	from register
			0	From FSM
11:10	2'b01	Bm_filter	Filter bias current control	
9:8	2'b00	Bm_lna	Output to analogue	
7	0	Pa_voltage	Pa voltage output to analogue	
6	0	Pd_xtal_reg	Pd_xtal manual value	
5	0	Pd_xtal_mn	Pd_xtal manual select	
4:0	5'b11111	Xtal_cc	Output to analogue	

TEST_PKDET (RW) Address: 1fh

Bit 23	Bit 22	Bit 21	Bit 20	Bit 19	Bit 18	Bit 17	Bit 16
test_en	Reserved			miso_drv		pll_icp_sel	
0	0			0	1	0	1
RW	RW			RW	RW	RW	RW
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
test_mode			test_point_sel1			test_point_sel0	
0	0	0	0	0	0	0	0
RW	RW	RW	RW	RW	RW	RW	RW
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
xtal_resc		bm_xtal	Reserved	pll_vdiv2_sel		pd_vco_pkdet_mn	pd_vco_pkdet_reg
0	0	1	0	0	0	0	0
RW	RW	RW	RW	RW	RW	RW	RW

Description of Word

OM6220 (12 inch) BLE Register Map v0.3

Bit	Value	Symbol	Description
23	0	test_en	Test mode enable
22:20	0	reserved	
19:18	2'b01	miso_drv	Output driving capability of MISO
17:16	2'b01	pll_icp_sel	Charge pump current control
15:14	3'b000	test_mode	Test mode select
12:10	3'b000	test_point_sel1	Test point select
9:8	2'b00	test_point_sel0	Test point select
7:6	2'b00	xtal_resc	Resistor value control of xtal bias
5	1	bm_xtal	Xtal bias current control
4	0	Reserved	
3:2	2'b00	pll_vdiv2_sel	Div2 dc bias control
1	0	pd_vco_pkdet_mn	Manual mode enable of pd_vco_pkdet
0	0	pd_vco_pkdet_reg	Manual mode register of pd_vco_pkdet