Eccelerators Library IP specification

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1. InterruptGeneratorIfc

1.1. Interrupt Generator Interface (InterruptGeneratorIfc)

Interface containing a basic Interrupt Generator block as predictable source and execurion check for interrupt simulation.

Table 1.1. Blocks of Interrupt Generator Interface

Blocks of Interrupt Generator Interface		
Block Address	ID	Block Name
`0x00`	InterruptGeneratorBlk	Interrupt Generator Block

Table 1.2. Resets of Interrupt Generator Interface

Resets of Registers of Interrupt Generator Interface	
ID	Reset Name

1.1.1. Interrupt Generator Block (InterruptGeneratorBlk)

This block defines a basic Interrupt Generator block as predictable source and execution check for interrupt simulation. It provides 4 channels to generate 4 interrupt sources.

Constraints:

1. Generate interrupts at a configurable rate for level triggered interrupt destinations.
2. Check if interrupts are executed in time.
3. Provide a failure output.

Interrupt Generator details:

Figure 1.1. Interrupt Generator details

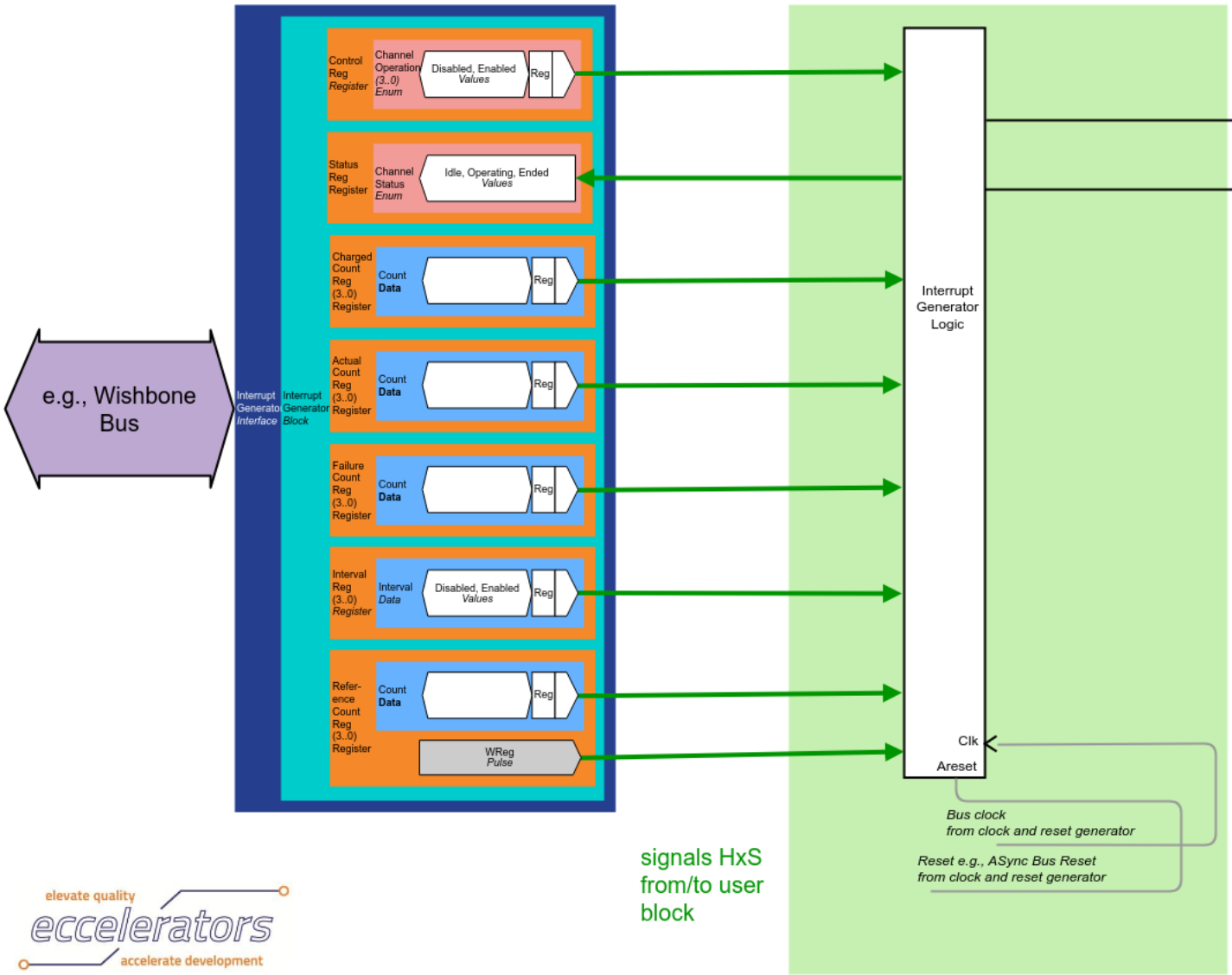

Table 1.3. Registers or Delegates of Interrupt Generator Block

Registers or Delegates of Interrupt Generator Block		
0x00 .. 0x57		Interrupt Generator Block
Address	ID	Name
0x00	ControlReg	Control Register
0x04	StatusReg	Status Register
0x08	ChargedCountReg0	Charged Count Register
0x0c	ChargedCountReg1	Charged Count Register
0x10	ChargedCountReg2	Charged Count Register
0x14	ChargedCountReg3	Charged Count Register
0x18	ActualCountReg0	Actual Count Register
0x1c	ActualCountReg1	Actual Count Register
0x20	ActualCountReg2	Actual Count Register
0x24	ActualCountReg3	Actual Count Register
0x28	FailureCountReg0	Failure Count Register

0x2c	FailureCountReg1	Failure Count Register
0x30	FailureCountReg2	Failure Count Register
0x34	FailureCountReg3	Failure Count Register
0x38	IntervalReg0	Interval Register
0x3c	IntervalReg1	Interval Register
0x40	IntervalReg2	Interval Register
0x44	IntervalReg3	Interval Register
0x48	ReferenceCoun-tReg0	Reference Count Register
0x4c	ReferenceCoun-tReg1	Reference Count Register
0x50	ReferenceCoun-tReg2	Reference Count Register
0x54	ReferenceCoun-tReg3	Reference Count Register

1.1.1.1. Control Register (ControlReg)

Table 1.4. Bits of Control Register

Bits of Control Register			
0x00			Control Register (ControlReg)
Bits	ID	Type	Description
03	ChannelOperation3	RW	**Table 1.5. Values of ChannelOperation3** Value / ID / Type / Description 0x0 / Disabled / R / An Interrupt is not pending. 0x1 / Enabled / R / An Interrupt is pending. **Table 1.6. Resets of ChannelOperation3** 0x0 / BusReset / RW / Default Bus Reset
02	ChannelOperation2	RW	**Table 1.7. Values of ChannelOperation2** Value / ID / Type / Description 0x0 / Disabled / R / An Interrupt is not pending. 0x1 / Enabled / R / An Interrupt is pending. **Table 1.8. Resets of ChannelOperation2** 0x0 / BusReset / RW / Default Bus Reset
01	ChannelOperation1	RW	**Table 1.9. Values of ChannelOperation1** Value / ID / Type / Description 0x0 / Disabled / R / An Interrupt is not pending. 0x1 / Enabled / R / An Interrupt is pending. **Table 1.10. Resets of ChannelOperation1** 0x0 / BusReset / RW / Default Bus Reset
00	ChannelOperation0	RW	**Table 1.11. Values of ChannelOperation0** Value / ID / Type / Description 0x0 / Disabled / R / An Interrupt is not pending. 0x1 / Enabled / R / An Interrupt is pending. **Table 1.12. Resets of ChannelOperation0** 0x0 / BusReset / RW / Default Bus Reset

1.1.1.2. Status Register (StatusReg)

Table 1.13. Bits of Status Register

Bits of Status Register			
0x04			Status Register (StatusReg)
Bits	ID	Type	Description

07 .. 06	ChannelStatus3	R	**Table 1.14. Values of ChannelStatus3** Value | ID | Type | Description 0b00 | Idle | R | An Interrupt is pending. 0b01 | Operating | R | An Interrupt is not pending. 0b1* | Ended | R | An Interrupt is not pending.
05 .. 04	ChannelStatus2	R	**Table 1.15. Values of ChannelStatus2** Value | ID | Type | Description 0b00 | Idle | R | An Interrupt is pending. 0b01 | Operating | R | An Interrupt is not pending. 0b1* | Ended | R | An Interrupt is not pending.
03 .. 02	ChannelStatus1	R	**Table 1.16. Values of ChannelStatus1** Value | ID | Type | Description 0b00 | Idle | R | An Interrupt is pending. 0b01 | Operating | R | An Interrupt is not pending. 0b1* | Ended | R | An Interrupt is not pending.
01 .. 00	ChannelStatus0	R	**Table 1.17. Values of ChannelStatus0** Value | ID | Type | Description 0b00 | Idle | R | An Interrupt is pending. 0b01 | Operating | R | An Interrupt is not pending. 0b1* | Ended | R | An Interrupt is not pending.

1.1.1.3. Charged Count Register (ChargedCountReg0)

Table 1.18. Bits of Charged Count Register

Bits of Charged Count Register			
0x08			Charged Count Register (ChargedCountReg0)
Bits	ID	Type	Description
31 .. 00	Count	RW	Number of interrupts to be generated and expected to be handled by SW. **Table 1.19. Resets of Count** 0x0000.0000 | BusReset | RW | Default Bus Reset

1.1.1.4. Charged Count Register (ChargedCountReg1)

Table 1.20. Bits of Charged Count Register

Bits of Charged Count Register			
0x0c			Charged Count Register (ChargedCountReg1)
Bits	ID	Type	Description
31 .. 00	Count	RW	Number of interrupts to be generated and expected to be handled by SW. **Table 1.21. Resets of Count** 0x0000.0000 | BusReset | RW | Default Bus Reset

1.1.1.5. Charged Count Register (ChargedCountReg2)

Table 1.22. Bits of Charged Count Register

Bits of Charged Count Register			
0x10			Charged Count Register (ChargedCountReg2)
Bits	ID	Type	Description
31 .. 00	Count	RW	Number of interrupts to be generated and expected to be handled by SW. **Table 1.23. Resets of Count** 0x0000.0000 | BusReset | RW | Default Bus Reset

1.1.1.6. Charged Count Register (ChargedCountReg3)

Table 1.24. Bits of Charged Count Register

Bits of Charged Count Register			
0x14			Charged Count Register (ChargedCountReg3)
Bits	ID	Type	Description
31 .. 00	Count	RW	Number of interrupts to be generated and expected to be handled by SW. **Table 1.25. Resets of Count** 0x0000.0000 | BusReset | RW | Default Bus Reset

1.1.1.7. Actual Count Register (ActualCountReg0)

Table 1.26. Bits of Actual Count Register

Bits of Actual Count Register			
0x18			Actual Count Register (ActualCountReg0)
Bits	ID	Type	Description
31 .. 00	Count	R	Actual count of interrupts already generated.

1.1.1.8. Actual Count Register (ActualCountReg1)

Table 1.27. Bits of Actual Count Register

Bits of Actual Count Register			
0x1c			Actual Count Register (ActualCountReg1)
Bits	ID	Type	Description
31 .. 00	Count	R	Actual count of interrupts already generated.

1.1.1.9. Actual Count Register (ActualCountReg2)

Table 1.28. Bits of Actual Count Register

Bits of Actual Count Register			
0x20			Actual Count Register (ActualCountReg2)
Bits	ID	Type	Description
31 .. 00	Count	R	Actual count of interrupts already generated.

1.1.1.10. Actual Count Register (ActualCountReg3)

Table 1.29. Bits of Actual Count Register

Bits of Actual Count Register			
0x24			Actual Count Register (ActualCountReg3)
Bits	ID	Type	Description
31 .. 00	Count	R	Actual count of interrupts already generated.

1.1.1.11. Failure Count Register (FailureCountReg0)

Table 1.30. Bits of Failure Count Register

Bits of Failure Count Register

0x28			Failure Count Register (FailureCountReg0)
Bits	ID	Type	Description
31 .. 00	Count	R	Failure count of missed interrupts.

1.1.1.12. Failure Count Register (FailureCountReg1)

Table 1.31. Bits of Failure Count Register

Bits of Failure Count Register			
0x2c			Failure Count Register (FailureCountReg1)
Bits	ID	Type	Description
31 .. 00	Count	R	Failure count of missed interrupts.

1.1.1.13. Failure Count Register (FailureCountReg2)

Table 1.32. Bits of Failure Count Register

Bits of Failure Count Register			
0x30			Failure Count Register (FailureCountReg2)
Bits	ID	Type	Description
31 .. 00	Count	R	Failure count of missed interrupts.

1.1.1.14. Failure Count Register (FailureCountReg3)

Table 1.33. Bits of Failure Count Register

Bits of Failure Count Register			
0x34			Failure Count Register (FailureCountReg3)
Bits	ID	Type	Description
31 .. 00	Count	R	Failure count of missed interrupts.

1.1.1.15. Interval Register (IntervalReg0)

Table 1.34. Bits of Interval Register

Bits of Interval Register			
0x38			Interval Register (IntervalReg0)
Bits	ID	Type	Description
31 .. 00	Interval	RW	Interval of generated interrupt in nanaoseconds. **Table 1.35. Resets of Interval** 0x0000.0000 | BusReset | RW | Default Bus Reset

1.1.1.16. Interval Register (IntervalReg1)

Table 1.36. Bits of Interval Register

Bits of Interval Register			
0x3c			Interval Register (IntervalReg1)
Bits	ID	Type	Description

31 .. 00	Interval	RW	Interval of generated interrupt in nanaoseconds. **Table 1.37. Resets of Interval** `0x0000.0000` BusReset RW Default Bus Reset

1.1.1.17. Interval Register (IntervalReg2)

Table 1.38. Bits of Interval Register

Bits of Interval Register			
`0x40`			Interval Register (IntervalReg2)
Bits	ID	Type	Description
31 .. 00	Interval	RW	Interval of generated interrupt in nanaoseconds. **Table 1.39. Resets of Interval** `0x0000.0000` BusReset RW Default Bus Reset

1.1.1.18. Interval Register (IntervalReg3)

Table 1.40. Bits of Interval Register

Bits of Interval Register			
`0x44`			Interval Register (IntervalReg3)
Bits	ID	Type	Description
31 .. 00	Interval	RW	Interval of generated interrupt in nanaoseconds. **Table 1.41. Resets of Interval** `0x0000.0000` BusReset RW Default Bus Reset

1.1.1.19. Reference Count Register (ReferenceCountReg0)

Table 1.42. Bits of Reference Count Register

Bits of Reference Count Register			
`0x48`			Reference Count Register (ReferenceCountReg0)
Bits	ID	Type	Description
31 .. 00	Count	RW	Reference count written by SW to acknowledge a processed interrupt. **Table 1.43. Resets of Count** `0x0000.0000` BusReset RW Default Bus Reset

1.1.1.20. Reference Count Register (ReferenceCountReg1)

Table 1.44. Bits of Reference Count Register

Bits of Reference Count Register			
`0x4c`			Reference Count Register (ReferenceCountReg1)
Bits	ID	Type	Description
31 .. 00	Count	RW	Reference count written by SW to acknowledge a processed interrupt. **Table 1.45. Resets of Count** `0x0000.0000` BusReset RW Default Bus Reset

1.1.1.21. Reference Count Register (ReferenceCountReg2)

Table 1.46. Bits of Reference Count Register

Bits of Reference Count Register			
`0x50`			Reference Count Register (ReferenceCountReg2)
Bits	ID	Type	Description
31	Count	RW	Reference count written by SW to acknowledge a processed interrupt.

..			**Table 1.47. Resets of Count**
00			`0x0000.0000` | BusReset | RW | Default Bus Reset

1.1.1.22. Reference Count Register (ReferenceCountReg3)

Table 1.48. Bits of Reference Count Register

Bits of Reference Count Register			
`0x54`			Reference Count Register (ReferenceCountReg3)
Bits	ID	Type	Description
31	Count	RW	Reference count written by SW to acknowledge a processed interrupt.
..			**Table 1.49. Resets of Count**
00			`0x0000.0000` | BusReset | RW | Default Bus Reset