

Customer Training Workshop Traveo™ II Event Generator

Q1 2021



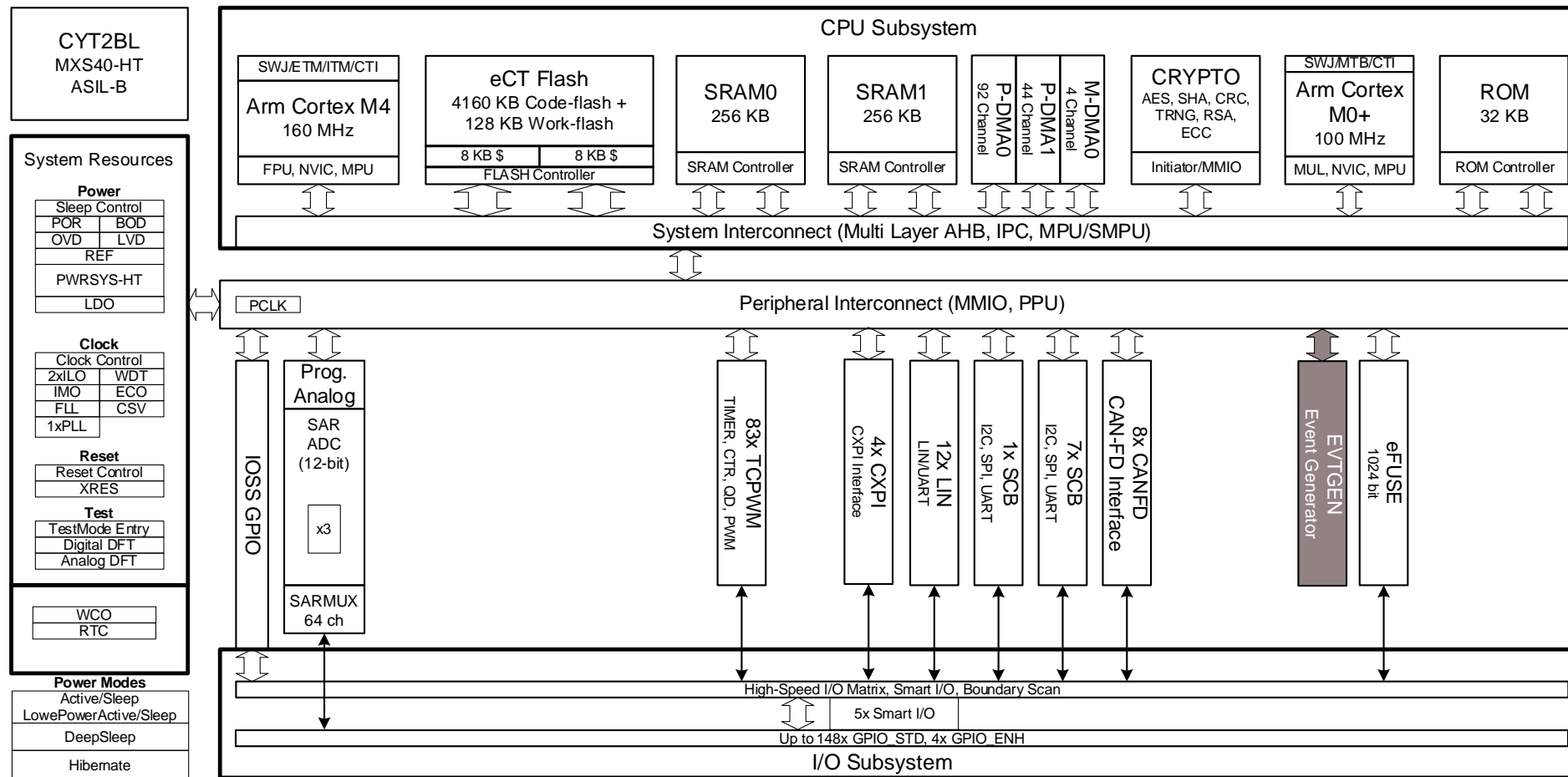
Target Products

- › Target product list for this training material:

Family Category	Series	Code Flash Memory Size
Traveo™ II Automotive Body Controller Entry	CYT2B6	Up to 576 KB
Traveo II Automotive Body Controller Entry	CYT2B7	Up to 1088 KB
Traveo II Automotive Body Controller Entry	CYT2B9	Up to 2112 KB
Traveo II Automotive Body Controller Entry	CYT2BL	Up to 4160 KB
Traveo II Automotive Body Controller High	CYT3BB/ CYT4BB	Up to 4160 KB
Traveo II Automotive Body Controller High	CYT4BF	Up to 8384 KB
Traveo II Automotive Cluster	CYT3DL	Up to 4160 KB
Traveo II Automotive Cluster	CYT4DN	Up to 6336 KB

Introduction to Traveo II Body Controller Entry

> Event Generator (EVTGEN) is a part of Peripheral blocks

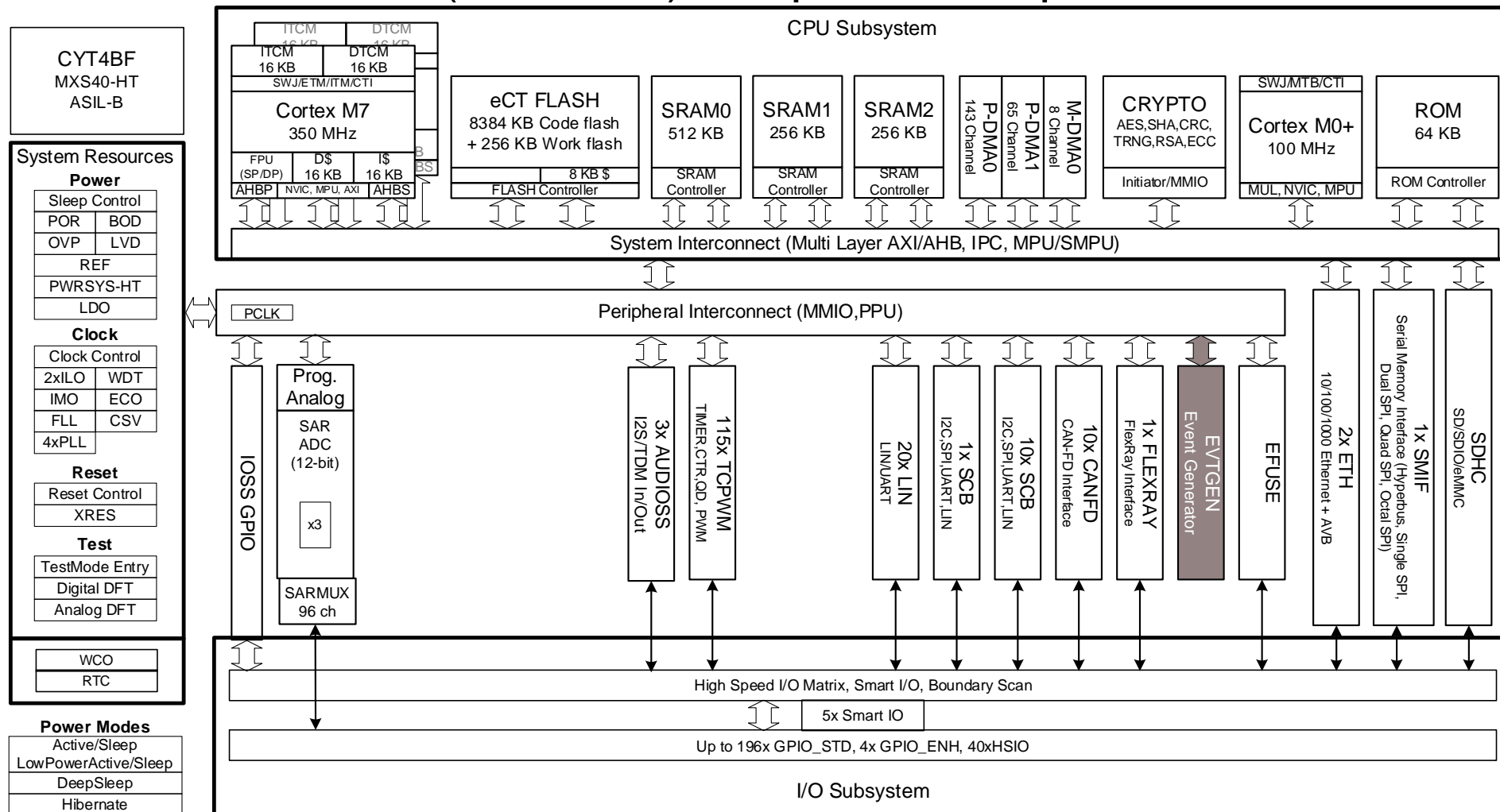


Hint Bar

Review TRM chapter 28 for additional details

Introduction to Traveo II Body Controller High

> Event Generator (EVTGEN) is a part of Peripheral blocks

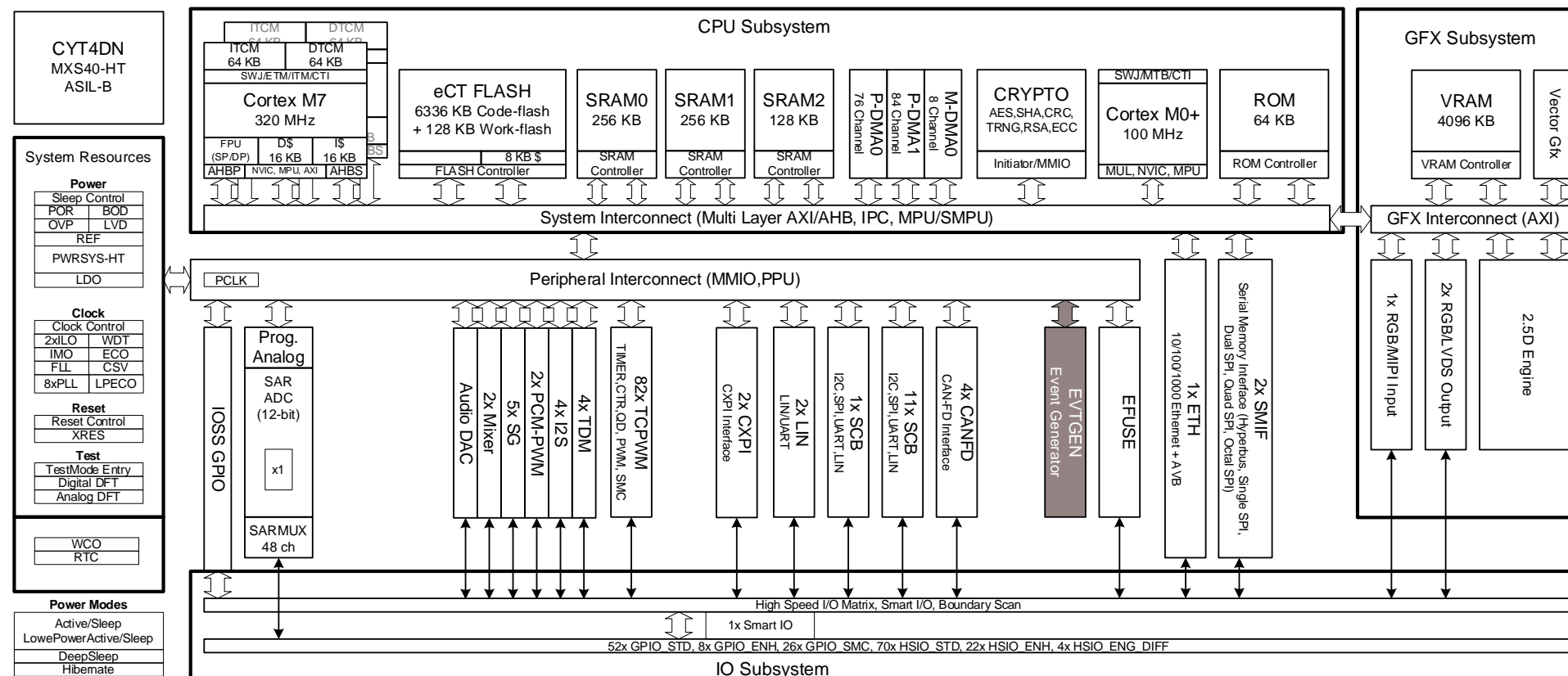


Hint Bar

Review TRM chapter 28 for additional details

Introduction to Traveo II Cluster

› Event Generator (EVTGEN) is a part of Peripheral blocks

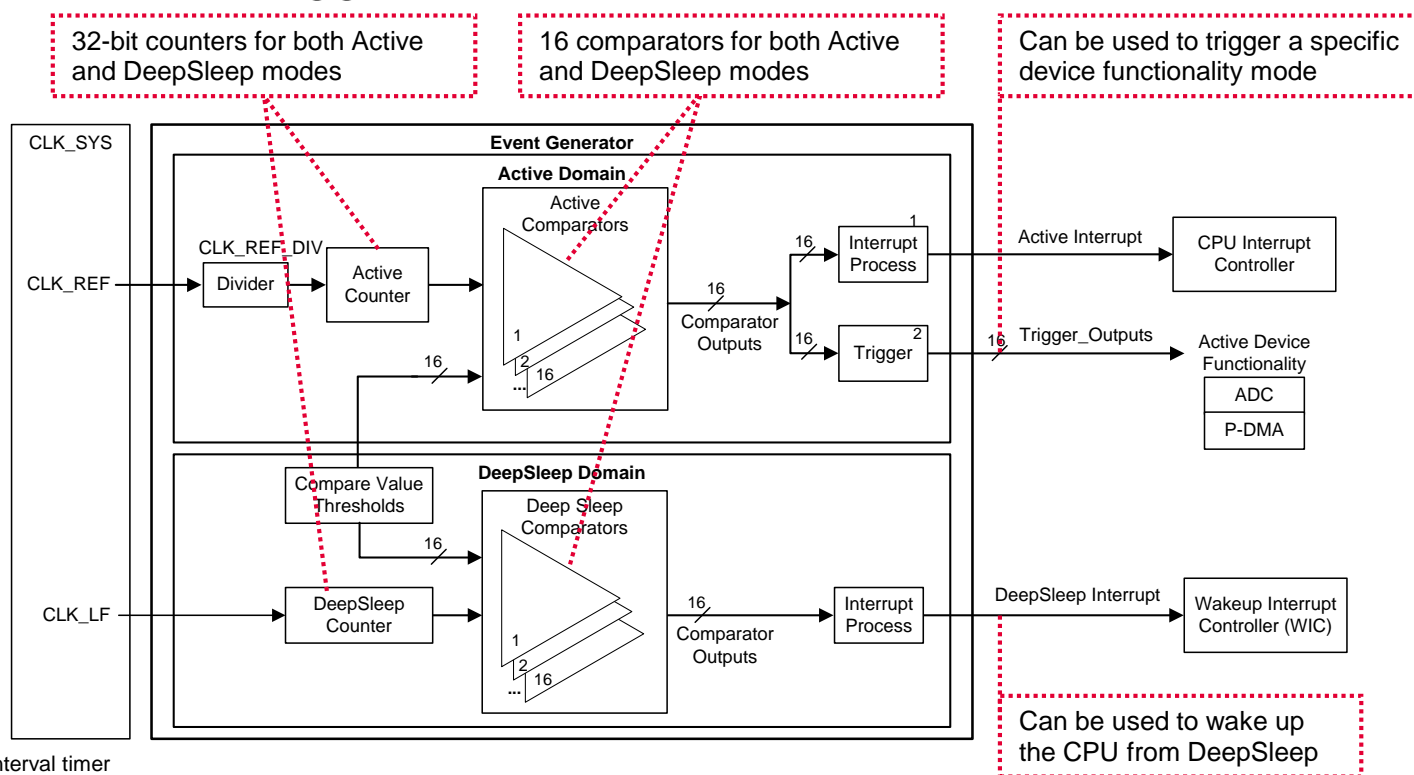


Hint Bar

Review TRM chapter 28 for additional details

Event Generator (EVTGEN) Overview

- › 32-bit counters, one each for DeepSleep and Active power modes
- › Interval range:
 - 30 ns to 76 hours (Active mode)
 - 31 μ s to 36 hours (DeepSleep mode)
- › Generates interrupts or triggers



¹ This interrupt can be used like a normal interval timer

² This trigger activates ADC

Hint Bar

Review TRM chapter 28 for additional details

Review the Trigger Multiplexer training section for additional trigger details

Review the Interrupt training section for additional interrupt details

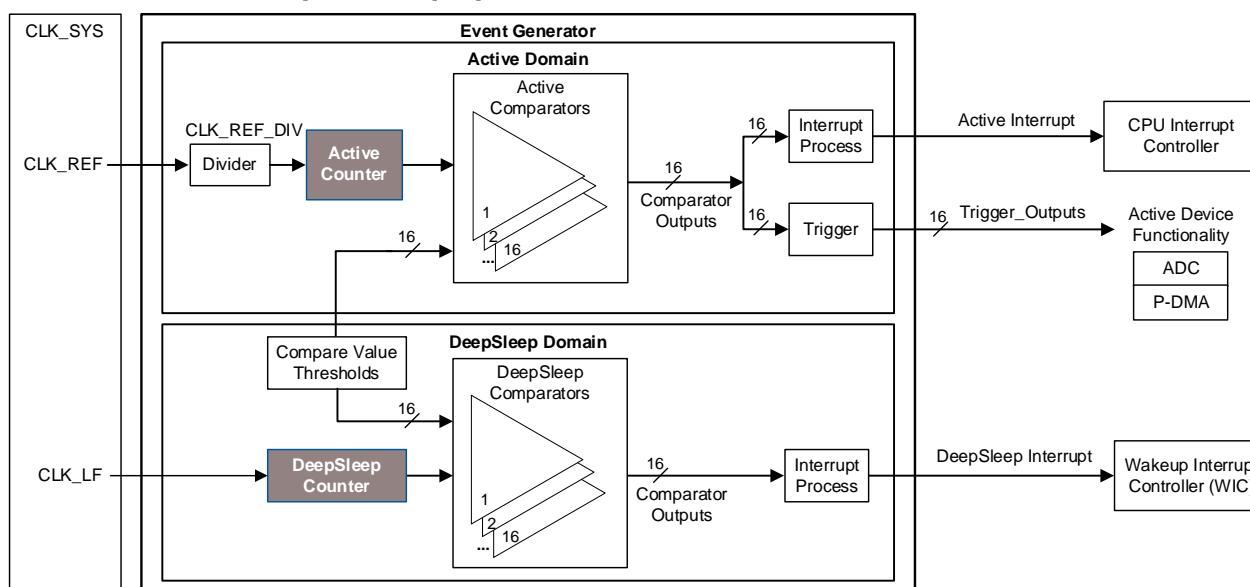
Counters

> Active Counter

- Works on the divided CLK_REF_DIV¹ (IMO² or ECO³)
- Restarts from 0 after overflow
- Enables Read by software in Active mode
- Not retained in DeepSleep power mode

> DeepSleep Counter

- Works on the CLK_LF⁴ (ILO⁵ or WCO⁶)
- Cannot be read by software in Active or DeepSleep mode



¹ Reference clock (IMO or ECO)
² IMO: Internal main oscillator

³ ECO: External crystal oscillator
⁴ Low-frequency clock (IMO or ECO)

⁵ ILO: Internal low-speed oscillator
⁶ WCO: Watch crystal oscillator

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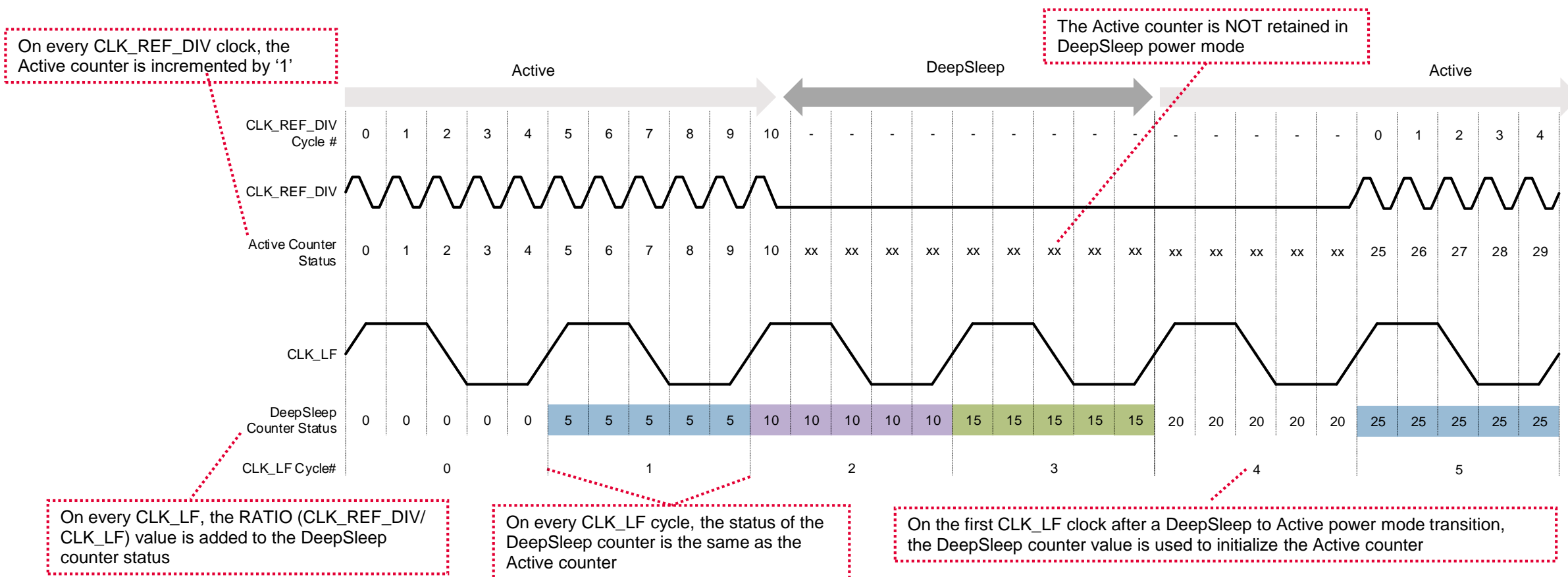
Review TRM section 28.2 for additional details

Review the Clock training section for additional clock details

Review the datasheet for each clock frequency

Relation of Active and DeepSleep Counter

- › Active and DeepSleep counter status with $RATIO = 5$ (CLK_REF_DIV is 5 times as fast as CLK_LF)
 - Active and DeepSleep counters are always in sync



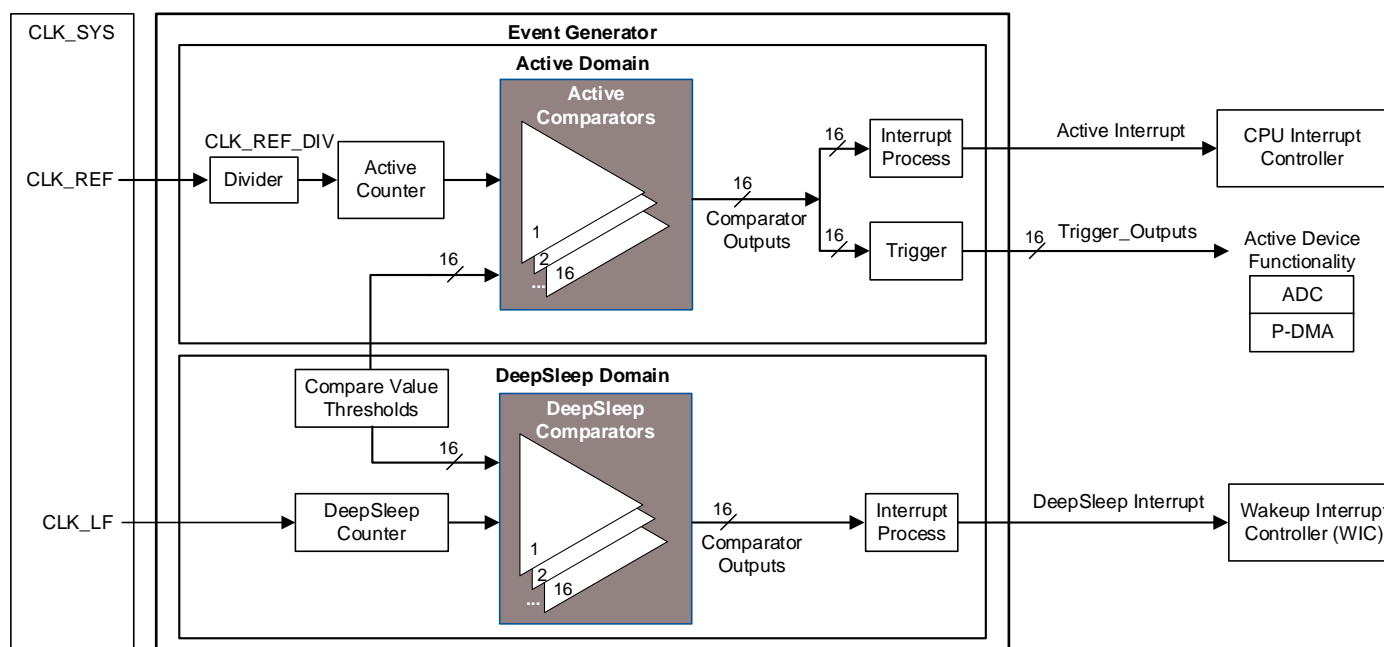
Comparators

> Active Comparators

- 16 (maximum): COMP0 [31:0]
- 30 ns (minimum); ECO: 33.33 MHz
- 76 hours (minimum); ECO: 4 MHz/256¹
- Compares to Active counter
- Generates triggers and interrupts

> DeepSleep Comparators

- 16 (maximum): COMP1 [31:0]
- 31 μ s (minimum); ILO: 32 kHz
- 36 hours (maximum); ILO: 32 kHz
- Compares to DeepSleep counter
- Generates wakeup interrupt



¹ CLK_REF_DIV range is 1 to 256

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Review Register TRM and TRM section 28.2.4 for additional details

Review the datasheet for each clock frequency

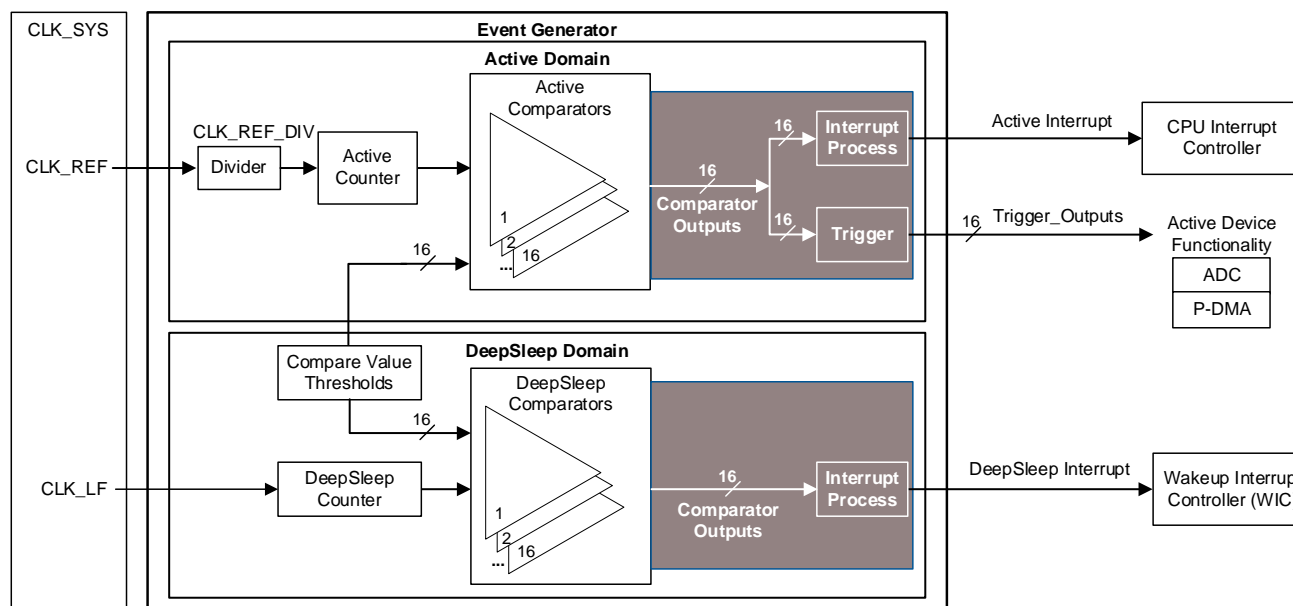
Comparator Outputs

> Interrupts

- An Active interrupt is generated when the Active counter is \geq COMP0
 - Use Case: Periodic task management
- DeepSleep interrupt occurs when the DeepSleep counter is \geq COMP1
 - Use Case: Wake up from DeepSleep mode

> Trigger

- Available only in Active power mode
- Generated when the Active counter is \geq COMP0
 - Use Case: Periodic task management



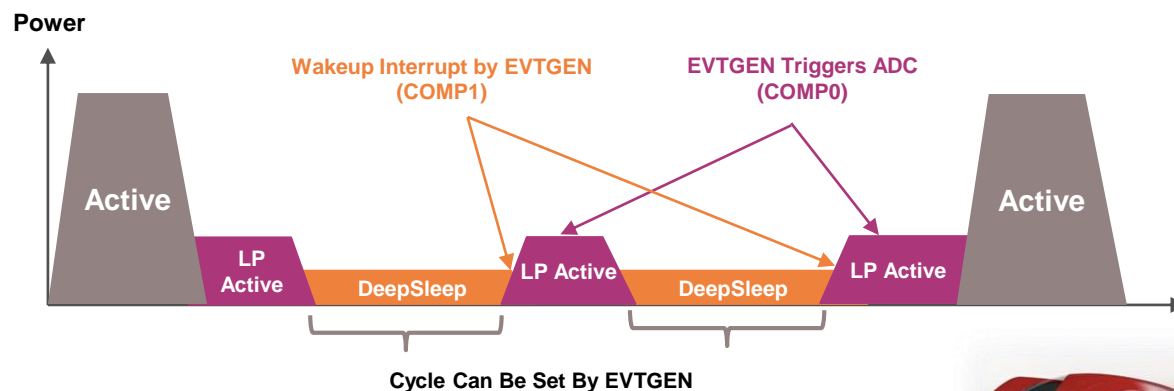
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Review TRM section 28.2.5 for additional details

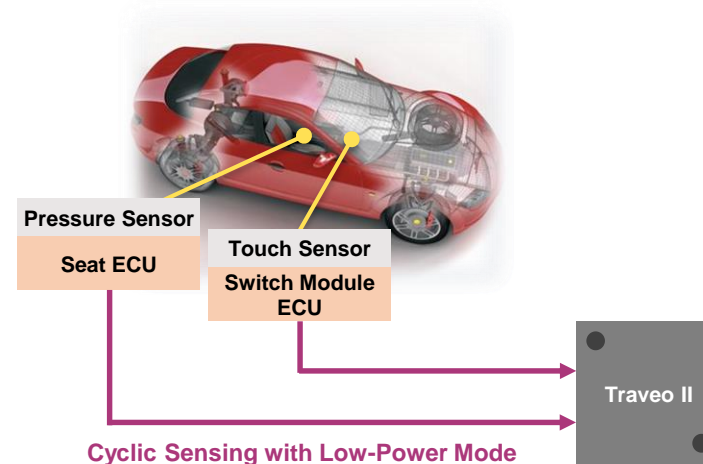
Review the Trigger Multiplexer training section for additional trigger details

Cyclic Wakeup Operation by EVTGEN

- > Enables periodic ADC sensing with low power
- > Periodic wakeup from DeepSleep mode by using the DeepSleep comparator (using COMP1)
- > After CM0+ or CM4/CM7 wakes up (in LP Active mode), EVTGEN can generate trigger for ADC (using COMP0)



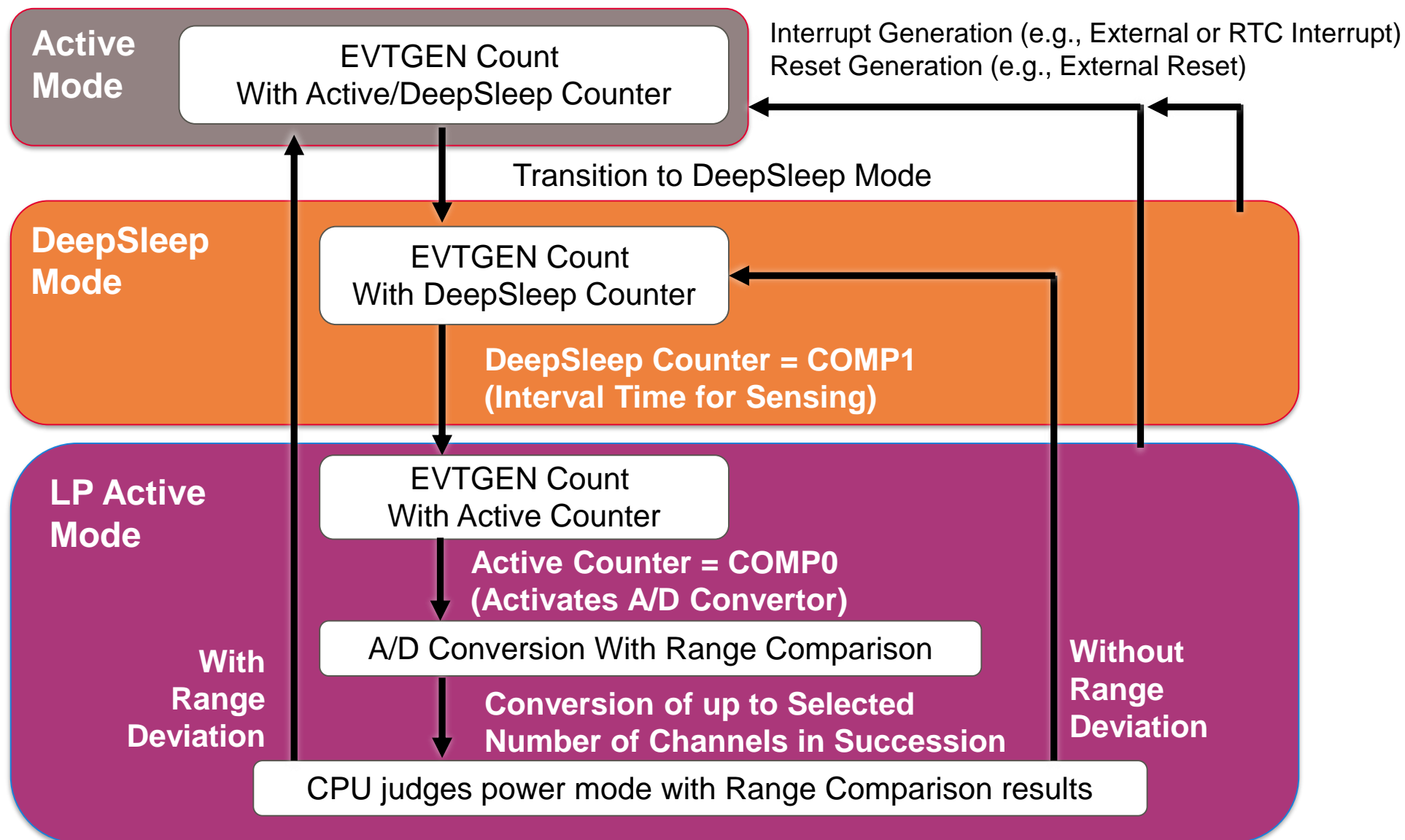
- > Use case
 - Cyclic touch detection on switch module ECU
 - Cyclic pressure sensing on seat ECU



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- Review TRM section 28.2.6 for additional details
- Review the Power Modes training section for additional low-power details
- Review the Trigger Multiplexer training section for additional trigger details
- Review the [Cyclic Wakeup Sequence for Sensing by ADC](#) section for additional cyclic wakeup sequence details

Cyclic Wakeup Sequence for Sensing by ADC





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Revision History

Revision	ECN	Submission Date	Description of Change
**	6140813	04/25/2018	Initial release
*A	6354961	10/18/2018	Added slides 2, 4, 5, and note descriptions in all slides. Updated slides 3, 9, 10, and 11.
*B	6599849	06/13/2019	Updated slides 2, 3, 4, 9 and 10. Added slide 5.
*C	7032177	11/27/2020	Updated slides 2 to 13.
*D	7065149	01/07/2021	Updated slides 1, 2, 7, 10 and 13.