8.1.2 Peripheral ID

Each peripheral is assigned a fixed block of address space that is minimum 4 KB in size and has at least 1024 registers of 32 bits.

For more information on available peripherals and their location in the address map, see Instantiation on page 216.

There is a direct relationship between peripheral ID and base address:

```
base_address = 0x40000000 + 0x1000 * ID
```

Example peripheral base addresses:

- 0x40000000 is assigned ID=0
- 0x40001000 is assigned ID=1
- 0x4001F000 is assigned ID=31

Peripherals can share the same ID, which has the following limitations:

- Shared registers or common resources
- Limited availability due to mutually exclusive operation; only one peripheral in use at a time
- Enforced peripheral behavior when switching between peripherals (disable the first peripheral before enabling the second)

8.1.3 Peripherals with shared ID

Peripherals sharing ID [1...n] and a base address may not be used simultaneously. Only one peripheral can be enabled at a given ID.

When switching between two peripherals sharing an ID, perform the following to prevent unwanted behavior.

1. Disable the previously used peripheral.
2. Disable any publish/subscribe connection to the DPPI system for the peripheral that is being disabled.
3. Clear all bits in the INTEN register (INTENCLR = 0xFFFFFFFF).
4. Configure the peripheral being enabled. Do not rely on the inherited configuration from the disabled peripheral.
5. Enable the peripheral.

For a list of peripherals that share an ID, see Instantiation on page 216.

8.1.4 Peripheral registers

Most peripherals have an ENABLE register. Unless otherwise specified, the peripheral registers must be configured before enabling the peripheral.

PSEL registers must be set before a peripheral is enabled or started. Updating PSEL registers while the peripheral is running can cause undefined behavior. To connect a peripheral to a different GPIO, the following must be performed:

1. Disable the peripheral.
2. Update the PSEL register.
3. Re-enable the peripheral.

> **Note:** The peripheral must be enabled before tasks and events can be used.

Most of the register values are not retained during System OFF or when a reset is triggered. Some registers will retain their values in System OFF or for some specific reset sources. These registers are marked as