ochin_CM4v2 Hardware test number 13

INA219 test

Devices used for tests

1. ochin CM4v2 carrier board
2. Raspberry Pi CM4 module with eMMC
3. Power Supply 0-30Vdc

Test description

The purpose of this test is to verify the proper functioning of the INA219 power monitor, available on the ochin board.

Preliminary configuration

In order to test the INA219 chip, it is necessary to enable the I2C1 interface.
The I2C interface could be enabled via raspi-config or directly adding the following lines in the boot/config.txt file:

```
dtparam=i2c_arm=on,i2c_arm_baudrate=400000
```

To interface the chip it's also needed to install the python libraries:

```
sudo apt-get install python3-smbus
sudo pip3 install pi-ina219
```

Test execution

To test the operation of INA219, simply run the python script "ina219_test.py":

```
python ina219_test.py
```

```python
#!/usr/bin/env python
from ina219 import INA219
from ina219 import DeviceRangeError

SHUNT_OHMS = 0.1


def read():
    ina = INA219(SHUNT_OHMS, busnum=1)
    ina.configure()

    print("Bus Voltage: %.3f V" % ina.voltage())
    try:
        print("Bus Current: %.3f mA" % ina.current())
        print("Power: %.3f mW" % ina.power())
        print("Shunt voltage: %.3f mV" % ina.shunt_voltage())
    except DeviceRangeError as e:
        # Current out of device range with specified shunt resistor
        print(e)


if __name__ == "__main__":
    read()
```

If the INA219 is working properly the following lines will be printed on the screen:

```
pi@raspberrypi:~ $ python ina219_test.py
Bus Voltage: 12.316 V
Bus Current: 165.890 mA
Power: 1972.439 mW
Shunt voltage: 14.520 mV
pi@raspberrypi:~ $
```

Test result

Test passed