ADV_IND Timing According to Nordic's Power Profiler

Online Power Profiler

https://devzone.nordicsemi.com/power/

Chip settings

Chip: nRF52840

Voltage: 1.8

DCDC regulator: off

LF clock: External crystal

Radio TX power: -4dBm

BLE settings

Role: Advertising (connectable)

Advertising interval (ms): 100

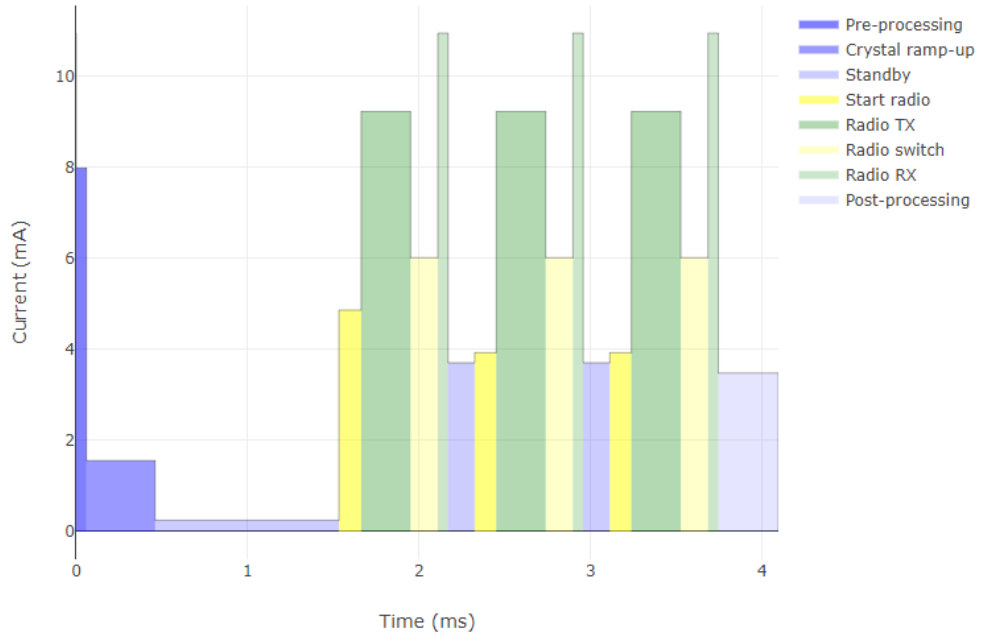
TX payload (Byte): 20

Test setup

Chip	nRF52840 QIAAC0
Softdevice	s140 6.1.0
Voltage	1.8 V
Regulator	LDO
BLE event details	
Interval	105.00 ms
Length	4.09 ms
Data transmission	
On air data rate	1 Mbps

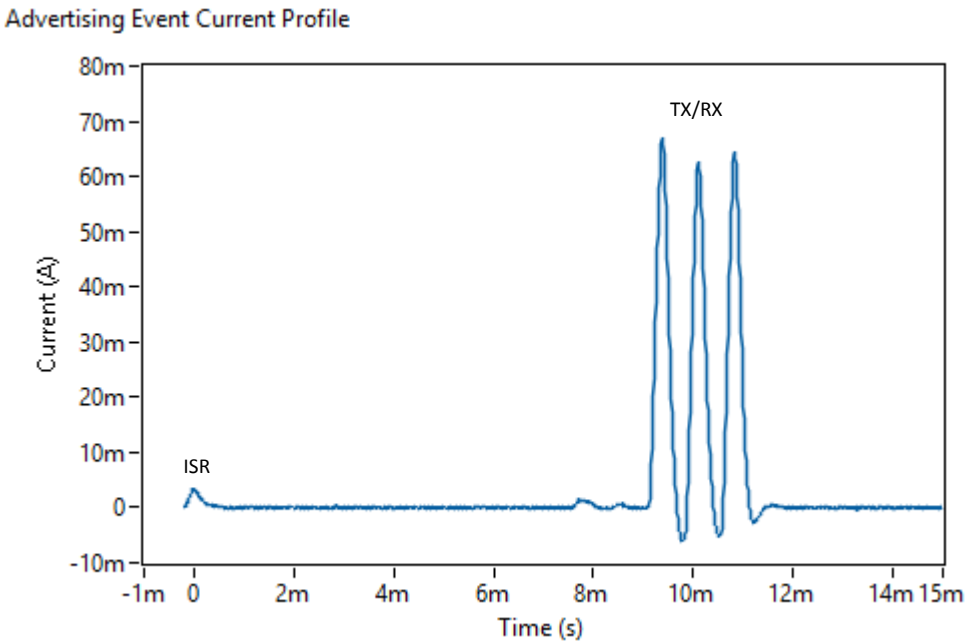
Current consumption

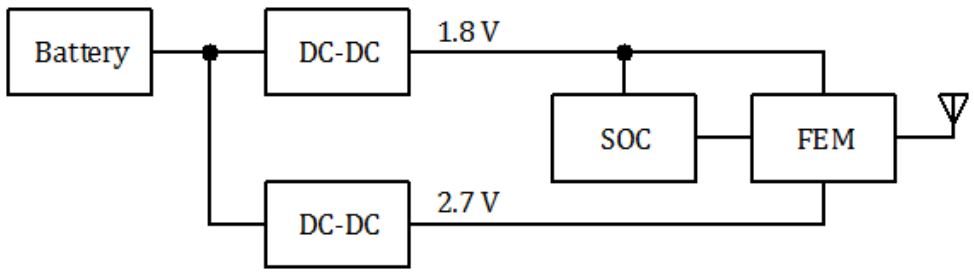
BLE event total charge	18.17 µC
Idle current	2.5 µA
Total average current	176 µA



Stage	Duration (µs)	Current (mA)
A) Pre-processing	60	8.0
B) Crystal ramp-up	400	1.6
C) Standby	1072	0.2
D) Start radio	130	4.9
E) Radio TX	288	9.2
F) Radio switch	159	6.0
G) Radio RX	60	10.9
H_1) Standby	155	3.7
H_2) Post-processing	350	3.5

Measurement of ADV_IND Current from 3.6 V Battery

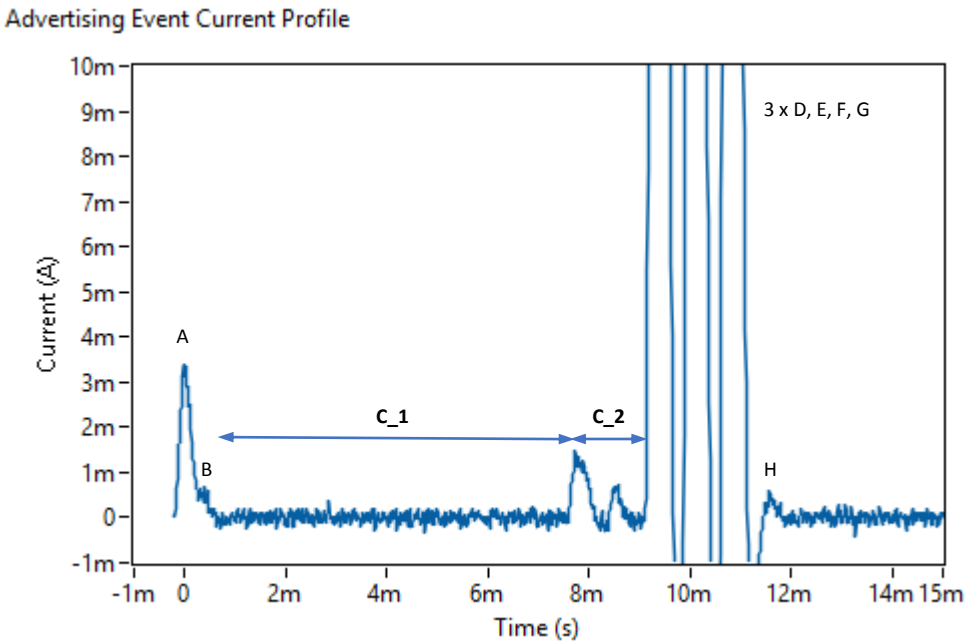




Notes:

- Peak labeled ISR corresponds to Stage A
- Peaks labeled TX/RX correspond to Stages D to G
- Design has a 20 dBm RF power amplifier

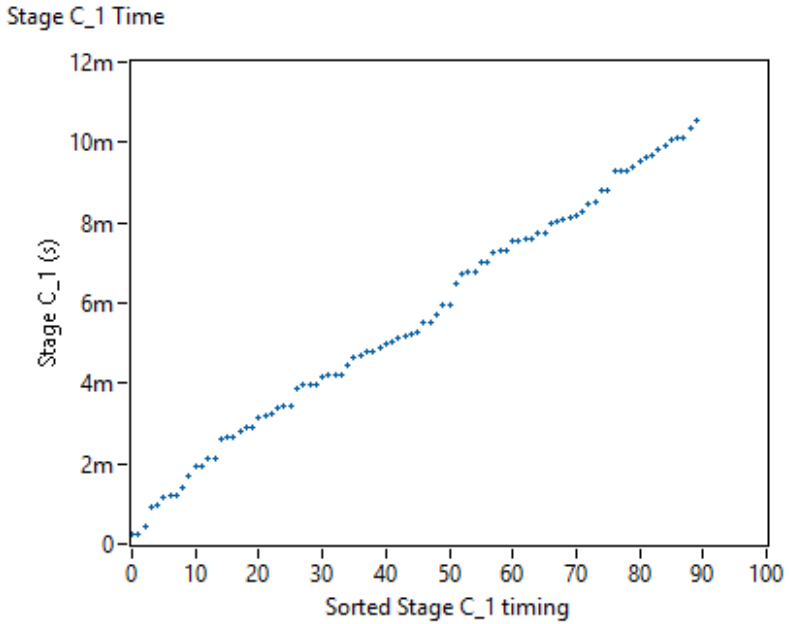
Measurement of ADV_IND Current from 3.6 V Battery



Notes:

- Stage C appears to consist of two portions:
  - A variable duration called C_1
  - A fixed duration called C_2

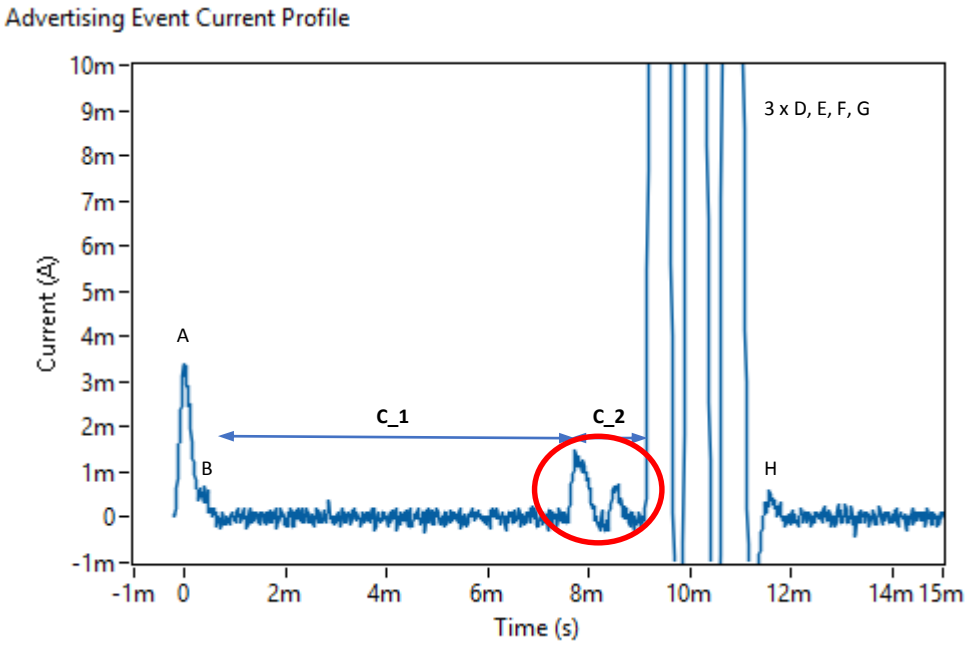
Stage C_1 Duration Measurement



Notes:

- Stage C_1 appears to vary between 0 s and 12 ms
- Is this expected?
- What is the upperbound?

Stage C_2 Unknown Activity



Notes:

- Stage C_2 appears to be SoftDevice S140 activity
- Is this correct?