

PCN no.: **PCN_134 rev 1.0.1**Date: **2020-07-16**

Device affected:

nRF9160-SIAA**nRF9160-SIBA****nRF9160-SICA**

Device version / Build Code:

BoA

Data sheet references:

N/A

Agreement reference:

N/A

Customers reference:

N/A**Description of change:**

Power consumption improvement and marking change due to new regional certifications. These changes result to new device number and ordering code.

	FROM	TO
Device number ¹ / Ordering code	nRF9160-SIAA-CC	nRF9160-SIAA-B1A-CC
	nRF9160-SIBA-CC	nRF9160-SIBA-B1A-CC
	nRF9160-SICA-CC	nRF9160-SICA-B1A-CC

Table 1. Device number and ordering code list

Notes: 1. Device number is ordering code without the container code suffix (CC).

2. CC is container code, either R for 13" reel or R7 for 7" reel.

This is a running change aiming to replace previous build code (BoA).

Impact: Does the change affect product:

- | | | |
|---------------------------|--|---|
| 1. Form | ☐ No | ☒ Yes – describe: Marking text |
| 2. Fit | ☒ No | ☐ Yes – describe: |
| 3. Function | ☐ No | ☒ Yes – describe: Power consumption improvements |
| 4. Quality or Reliability | ☐ No | ☒ Yes – describe: ESD Charged Device Model (CDM) verified to 250V |
| Classification of change | ☐ Minor | ☒ Major |



Reason for change:

SiP internal power management updated to improve power consumption.

a) 5.2.1.15 Application CPU active current consumption

Symbol	Description	nRF9160 GEN2	Changes compared to nRF9160 GEN1	Units
ICPU0_FLASH	CPU running CoreMark @64 MHz from flash, clock = HFXO,cache enabled	2,2	-24 %	mA
ICOREMARK_PER_MA_F	CoreMark per mA, executing from flash, CoreMark=243	107	27 %	Core / mA

b) 5.2.1.15 Modem current consumption

Symbol	Description	nRF9160 GEN2					Change compared to nRF9160 GEN1			
		B13	B20	B3	B4	Units	B13	B20	B3	B4
		(typ.)	(typ.)	(typ.)	(typ.)		(typ.)	(typ.)	(typ.)	(typ.)
Sleep current consumption, Cat-M1 and Cat-NB1										
IPSM	PSM floor current	2,7	2,7	2,7	2,7	uA	-33 %	-33 %	-33 %	-33 %
Average current consumption, radio resource control (RRC) mode, Cat-M1										
IEDRX	eDRX average current, 81.92 s, one PO/PTW, PTW = 2.56 s	18	18	18	18	uA	-14 %	-14 %	-14 %	-14 %
IIEDRX	Idle eDRX average current, 655 s, one PO/PTW, PTW = 2.56 s	6	6	6	6	uA	-33 %	-33 %	-33 %	-33 %
IRMC_0DBM	Uplink 180 kbit/s, Pout 0 dBm, RMC settings as per 3GPP TS 36.521-1 Annex A.2	45	45	45	45	mA	0 %	0 %	0 %	0 %
IRMC_10DBM	Uplink 180 kbit/s, Pout 10 dBm, RMC settings as per 3GPP TS 36.521-1 Annex A.2	50	50	55	55	mA	0 %	0 %	0 %	0 %
IRMC_23DBM	Uplink 180 kbit/s, Pout 23 dBm, RMC settings as per 3GPP TS 36.521-1 Annex A.2	100	105	115	115	mA	-5 %	-5 %	-18 %	-18 %
Average current consumption, radio resource control (RRC) mode, Cat-NB1										
IEDRX	eDRX average current, 81.92 s, one PO/PTW, PTW = 2.56 s	37	37	37	37	uA	0 %	0 %	0 %	0 %
IIEDRX	Idle eDRX average current, 655 s, one PO/PTW, PTW = 2.56 s	9	9	9	9	uA	-18 %	-18 %	-18 %	-18 %
IRMC_0DBM	Pout 0 dBm, QPSK, 1SC, 15 kHz, TX 33% RX 33% ("balanced TX and RX"), RMC settings as per 3GPP TS 36.101 Annex A.2.4	35	35	40	40	uA	0 %	0 %	0 %	-18 %
IRMC_10DBM	Pout 10 dBm, QPSK, 1SC, 15 kHz, TX 33% RX 33% ("balanced TX and RX"), RMC settings as per 3GPP TS 36.101 Annex A.2.4	40	45	45	45	uA	0 %	0 %	-10 %	-10 %
IRMC_23DBM	Pout 23 dBm, QPSK, 1SC, 15 kHz, TX 33% RX 33% ("balanced TX and RX"), RMC settings as per 3GPP TS 36.101 Annex A.2.4	95	105	110	110	mA	0 %	0 %	-15 %	-15 %
IRMC_0DBM	Pout 0 dBm, BPSK, 1SC, 3.75 kHz, TX 80% RX 10% ("TX intensive"), RMC settings as per 3GPP TS 36.101 Annex A.2.4	50	50	55	55	mA	0 %	0 %	0 %	0 %
IRMC_10DBM	Pout 10 dBm, BPSK, 1SC, 3.75 kHz, TX 80% RX 10% ("TX intensive"), RMC settings as per 3GPP TS 36.101 Annex A.2.4	65	65	75	75	mA	0 %	0 %	0 %	-6 %
IRMC_23DBM	Pout 23 dBm, BPSK, 1SC, 3.75 kHz, TX 80% RX 10% ("TX intensive"), RMC settings as per 3GPP TS 36.101 Annex A.2.4	190	190	225	225	mA	0 %	0 %	-15 %	-15 %
Peak current consumption, nominal operating conditions, Cat-M1										
ITX_0DBM	TX subframe, Pout 0 dBm	60	60	65	65	mA	0 %	0 %	0 %	2 %
ITX_10DBM	TX subframe, Pout 10 dBm	80	85	90	90	mA	0 %	0 %	-5 %	0 %
ITX_23DBM	TX subframe, Pout 23 dBm	255	275	365	360	mA	0 %	0 %	-4 %	-1 %
IRX_-90DBM	RX subframe, Pin -90 dBm	45	45	45	45	mA	0 %	0 %	0 %	0 %
ITX_TRANSIENT	TX transient	35	35	35	35	mA/us	-13 %	-22 %	-30 %	-30 %
Peak current consumption, nominal operating conditions, Cat-NB1										
ITX_0DBM	TX subframe, Pout 0 dBm	55	60	65	65	mA	0 %	0 %	0 %	0 %
ITX_10DBM	TX subframe, Pout 10 dBm	75	85	90	85	mA	0 %	0 %	-10 %	-6 %
ITX_23DBM	TX subframe, Pout 23 dBm	230	255	275	275	mA	0 %	0 %	-17 %	-14 %
IRX_-90DBM	RX subframe, Pin -90 dBm	35	35	35	35	mA	0 %	0 %	0 %	0 %



ITX_TRANSIENT	TX transient	35	35	35	35	mA/μs	0 %	0 %	0 %	0 %
Peak current consumption, extreme operating conditions, Cat-M1										
ITX_PEAK	TX subframe, Pout >21 dBm, Ant VSWR3	330	355	360	360	mA	-7 %	-1 %	-21 %	-22 %
ITX_PEAK	TX subframe, Pout >20 dBm, Ant VSWR3, Vbat 3.5 V, Temp 85 °C	355	390	375	375	mA	-1 %	3 %	-18 %	-17 %
ITX_PEAK	TX subframe, Pout >20 dBm, Ant VSWR3, Vbat 3.0 V, Temp 85 °C	415	415	435	435	mA	1 %	-7 %	-19 %	-17 %
Peak current consumption, extreme operating conditions, Cat-NB1										
ITX_PEAK	TX subframe, Pout >21 dBm, Ant VSWR3	280	310	325	325	mA	-3 %	-2 %	-18 %	-18 %
ITX_PEAK	TX subframe, Pout >20 dBm, Ant VSWR3, Vbat 3.5 V, Temp 85 °C	315	350	365	365	mA	-5 %	-3 %	-19 %	-19 %
ITX_PEAK	TX subframe, Pout >20 dBm, Ant VSWR3, Vbat 3.0 V, Temp 85 °C	370	405	425	425	mA	-4 %	-2 %	-19 %	-19 %

Consequences of change:

- Use new ordering code when this change is already active
- Physical dimensions are the same
- No changes on pin-out nor form factor
- Chipset is the same nRF9120
 - Application processor is the same
 - Memory configuration is the same
 - Baseband is the same
 - RF receiver and transmitter are the same
- Compliant with Modem Firmware 1.1.3 and 1.2.1 or later
- No impact to Device management
- Resistance towards the ESD Charged Device Model (CDM) verified to 250V
- SiP external cap, DECo, to be changed from 47μF to 4.7μF
- Certification of module will be done by Nordic before Dec'20

Verification of change:

The new versions are approved and qualified according to Nordic Semiconductor's standard quality procedures.



Marking/Shipping labels:

Marking & label sample illustrations

FROM

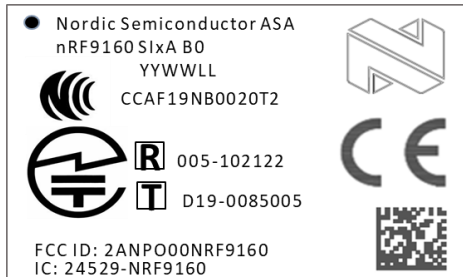


Figure 1: Current marking

TO

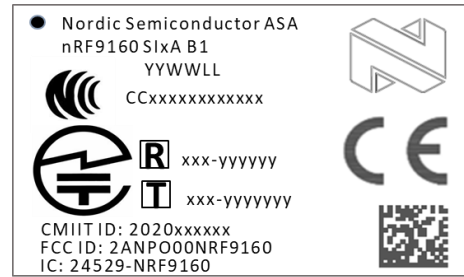


Figure 2: New marking



Figure 3: Current certification label

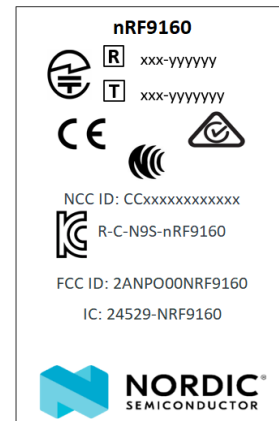
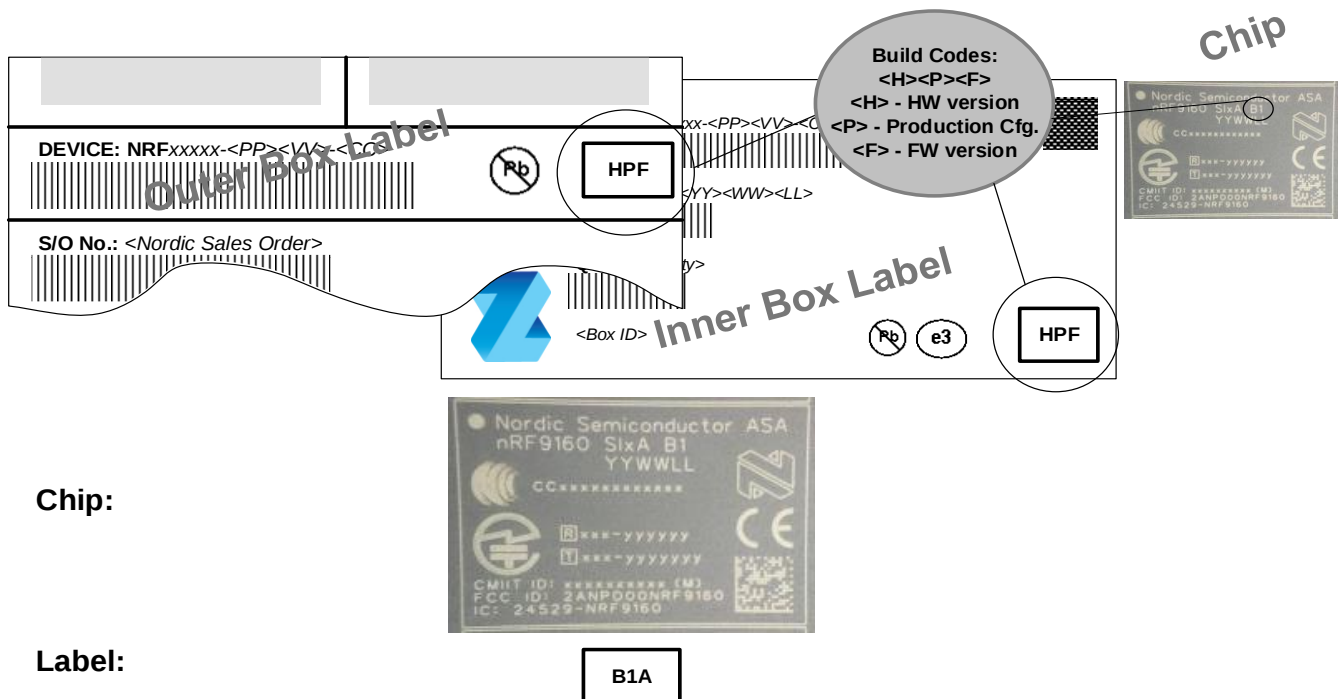


Figure 4: New certification label



Chip:

Label:

Change active from (date):

2020-12-01

Change active from (lot no/date code/build code):

Build code – B1A all variants



Last time order (date):

NA

Final shipment date:

NA

Samples Available (date/build code):

2020-09-28 / Build code nRF9160-SICA-B1A

Technical contact at Nordic Semiconductor:

Contact: Technical Support Team at
www.nordicsemi.com, "Support"

Commercial contact at Nordic Semiconductor:

Contact: Account Regional Sales Manager: www.nordicsemi.com,
"Contact Us"

Authorization for Nordic Semiconductor

Product Manager: Kristian Sæther

Date: 2020-07-16

Sign:

Quality Director: Ebbe Rømcke

Date: 2020-07-16

Sign:

Nordic Semiconductor ASA

P.O. Box 2336

7004 Trondheim

Norway

Tel.: +47 72 89 89 00