

Final Product/Process Change Notification

Document # : FPCN21582X Issue Date: 21 December 2016

Title of Change:	Four changes to the Ezairo 7150 SL hybrid	
Proposed first ship date:	27 March 2017 or earlier after customer approval.	
Contact information:	Contact your local ON Semiconductor Sales Office or <christophe.waelchli@onsemi.com></christophe.waelchli@onsemi.com>	
Samples:	Contact your local ON Semiconductor Sales Office	
Additional Reliability Data:	Contact your local ON Semiconductor Sales Office or < christophe.waelchli@onsemi.com >.	
Type of notification:	This is a Final Product/Process Change Notification (FPCN) sent to customers. FPCNs are issued 90 days prior to implementation of the change. ON Semiconductor will consider this change accepted, unless an inquiry is made in writing within 30 days of delivery of this notice. To do so, contact <pcn.support@onsemi.com>.</pcn.support@onsemi.com>	
Change Part Identification:	Implementation of the change will be controlled by work order number.	
Change category:	■ Wafer Fab Change ■ Assembly Change ■ Test Change ■ Other ■ Other	
Change Sub-Category(s): Manufacturing Site Change/ Manufacturing Process Chan	Snipping/Packaging/Marking	
Sites Affected: All site(s) not ap	ON Semiconductor site(s): ON Burlington, Canada External Foundry/Subcon site(s)	

Description and Purpose:

A total of 4 changes have been applied to the Ezairo 7150 SL:

Change 1: switch to the new version of the Nordic radio

The Ezairo 7150 SL is a hybrid module that includes, among other, the Nordic nRF51822 radio.

On July 3 2015, we received pcn_092_v1.2 from Nordic that informed us that the nRF51822 will be modified. A new version (Rev3) will replace Rev2, and Rev2 will go EOL with LTB on Dec 31 2015 and LTS on June 30 2016. Because of this, we had to switch to Rev3 in the Ezairo 7150 SL.

The Rev3 and Rev2 have the exact same form factor. So the Ezairo 7150 SL form factor is unchanged.

	Before Change	After Change	
nRF51822	Rev2, build code: 0xA00	Rev3, build code: 0xB00	
	Changes between nRF51822 Rev2 and Rev3 are described in pcn_092_v1.2 from Nordic: http://infocenter.nordicsemi.com/pdf/pcn_092_v1.2.pdf		
	Migration from the nRF51822 Rev2 and Rev3 is described in a white paper from Nordic: http://infocenter.nordicsemi.com/pdf/nwp_021.pdf		

Change 2: nRF51822 bootloader, Soft Device and application update.

The bootloader, Soft Device and user application have been updated on the Nordic radio. These changes were required to support the Rev3 of the nRF51822:

• On Rev3, Nordic is no longer supporting SDK version 7, which we were using with the Rev2 version.

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- The bootloader and user application have been rebuilt with SDK version 10. Minor improvements and bugfixes were included.
- Version 8.0.0 of the S110 Soft Device (compatible with SDK version 10) is now loaded on the Nordic radio.

Change 3: New default FW on the Ezairo 7100 DSP.

The Ezairo 7150 SL is a hybrid module that includes, among other, the Ezairo 7100 DSP and a 2 Mbit EEPROM, in which the Ezairo FW is stored.

The default software stored in the EEPROM has been modified. We are replacing a simple "audio pass-through" application by our first version of the Ezairo 7150 SL Pre Suite firmware bundle. Our Pre Suite firmware bundle includes default hearing aid algorithms that can be used in end products, and is firmware-upgradeable in the field using the Ezairo Sound Designer Software.

Customers developing their own hearing aid firmware should overwrite the default Pre Suite firmware bundle with their own firmware. Note that the debug port of Ezairo 7150 SL will now be in Restricted Mode, and customers must use the debug port protocol to Wipe and Unlock the device in order to overwrite the default application with their own firmware.

Change 4: Two additional system clock calibration settings

We are introducing 2 additional system clock (SYS_CLK) calibration settings for 12.80 and 15.36 MHz. These 2 calibration settings are introduced through a modification of the production test program. The new test program is computing the calibration settings for these 2 SYS_CLK values and writing them in the manufacturing area of the EEPROM in the "CLKCAL ENTRY" area.

2 VDDC calibration values will be included:

- The default VDDC calibration value, available today, for VDDC = 0.82 V is stored in the VDDC calibration entry located in the Manufacturing Area of the EEPROM at address 0x0064.
- A new calibration value for VDDC = 0.88 V will be stored in the Manufacturing Area of the EEPROM at address
 EEFS VDDC ALT CAL ADDR (0x00E8). This VDDC value should be used for SYS CLK values of 12.80 or 15.36 MHz.

In order to retrieve the calibration value for VDDC = 0.88V from EEPROM, the macro EELIB ReadWord24 can be used.

Note that the default clock calibration settings (10.24 MHz) will not change. The default VDDC calibration settings (0.82 V) will not change either. This means that the proposed new calibration settings will not impact an application that doesn't use these settings.

Implementation of the changes will be controlled by work order number. Devices shipped after the Proposed first ship date, or earlier, pending customer approval, will include the proposed changes. Exact order number will be communicated to customers individually. OPN will not change.

The Ezairo 7150 SL datasheet has been updated and the new version will be available of the PCN issue date.

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Reliability	Data	Summary	/ :
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No changes in manufacturing material or processes.

Functional verification tests of the Nordic IC Rev3 were done.

Electrical Characteristic Summary: Electrical characteristics presented in the Ezairo 7150 SL datasheet are not impacted. Note that some of the electrical characteristics of the nRF51822 are changing with the Rev2 to Rev3 transition, but they do not impact the Ezairo 7150 SL specifications detailed in the Ezairo 7150 SL datasheet. For more details about the changes of electrical characteristics of the nRF51822, please refer to pcn_092_v1.2 (see link above).

List of affected Standard Parts:

Part Number	Qualification Vehicle	
E7150-102A49-AG	E7150-102A49-AG	
E7150-102A49-BPG	E7150-102A49-AG	

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