



PRODUCT INFORMATION LETTER

PIL MMS-MIC/12/7477
Dated 11 Oct 2012

**STM32F20x, STM32F21x Low Speed Oscillator consumption
reduction Product Information Letter 7220 update**

Sales Type/product family label	STM32F20x, STM32F21x family products
Type of change	Product design change
Reason for change	Current consumption Reduction in VBAT mode
Description	Update of the Product Information Letter referenced "MMS-MIC/12/7220" in order to provide more exhaustive information on the changes from revY to revX of these devices.
Forecasted date of implementation	10-Oct-2012
Forecasted date of samples for customer	10-Oct-2012
Forecasted date for STMicroelectronics change Qualification Plan results availability	10-Oct-2012
Involved ST facilities	ST Rousset diffusion plant

DOCUMENT APPROVAL

Name	Function
Colonna, Daniel	Marketing Manager
Delannoy, Alain	Process Owner
Narche, Pascal	Q.A. Manager



PRODUCT INFORMATION LETTER

STM32F20x, STM32F21x Low Speed Oscillator consumption reduction Product Information Letter 7220 update

MMS - Microcontrollers Division (MCD)

Dear Customer,

This letter is an update of the Product Information Letter referenced "MMS-MIC/12/7220" in order to provide more exhaustive information on the changes from revY to revX of these devices.

Adding informations:

RevY devices were presenting :

1/ a high consumption induced by a Low Speed Oscillator (32.678KHz Real Time Clock) higher transconductance (Gm) than targeted.

2/ a Gm higher than 7 μ A/V instead of the usual target lower than 3 μ A/V for such low power oscillators.

On revX devices,

1/ the power consumption of the Low Speed Oscillator has been improved from 3 μ A to 1 μ A in typical conditions (VDD=3.3Volts and 25 C)

2/ consequently the Gm has been reduced down to its initial target of 2.8 μ A/V.

This allows a better current consumption in VBAT mode while keeping the Low Speed Oscillator and Real Time Clock active for low power applications.

During the validation of the STM32F4, we evidenced that the STM32 Flash Interface could be improved to operate up to 168MHz. As part of our cross fertilization activities, the same validation has been executed on the STM32F2 devices and the flash interface improvement were not evidenced as mandatory for STM32F2 120MHz operating frequency. Nevertheless, in line with our continuous improvement policy and by precautionary principle, the improved version of the Flash interface has been embedded into the revX of STM32F2. This change does not affect the form, the fit or the function of the device.

Notice that this PIL is now implemented as indicated in previous PIL 7220.

PIL 7220 already sent, still up to date :

We wish to inform you about an improvement related to the Low Speed Oscillator on STM32F20x and STM32F21x devices.

What is the change?

On revX devices, the power consumption of the Low Speed Oscillator (32.678KHz Real Time Clock) has been reduced from 3 μ A to 1 μ A at typical conditions (VDD=3.3Volts and 25°C), thus providing better current consumption in VBAT mode while keeping the Low Speed Oscillator and Real Time Clock active for low power applications.

Why?

The power consumption of the Low Speed Oscillator of the Real Time Clock is reduced by factor of 3 at typical conditions, which is perfect for low power applications.

When?

The design improvement will be implemented week 18 2012.

How will the change be qualified?

This change is already qualified using the standard STMicroelectronics Corporate Procedures for Quality and Reliability, in full compliancy with the JESD-47 international standard.

Qualification plan

See Qualification plan attached at the end of this document.

What is the impact of the change?

ST decreased the power consumption on VBAT from 3 μ A to 1 μ A (25°C and 3.3volts), while keeping the same functionality for the Low Speed Oscillator in terms of oscillations and all other features.

BEFORE:

Table 21. Typical and maximum current consumptions In V_{BAT} mode

Symbol	Parameter	Conditions	Typ		
			$T_A = 25^\circ C$		
			$V_{DD} = 1.8 V$	$V_{DD} = 2.4 V$	$V_{DD} = 3.3 V$
I_{DD_VBAT}	Backup domain supply current	Backup SRAM ON, RTC ON	3.2	3.4	3.7
		Backup SRAM OFF, low-speed oscillator and RTC ON	2.6	2.7	3.0
		Backup SRAM ON, RTC OFF	0.7	0.7	0.8
		Backup SRAM OFF, RTC OFF	0.1	0.1	0.1

NOW:

Symbol	Parameter	Conditions	Typ		
			$T_A = 25^\circ C$		
			$V_{BAT} = 1.8 V$	$V_{BAT} = 2.4 V$	$V_{BAT} = 3.3 V$
I_{DD_VBAT}	Backup domain supply current	Backup SRAM ON, low-speed oscillator and RTC ON	1.29	1.42	1.68
		Backup SRAM OFF, low-speed oscillator and RTC ON	0.62	0.73	0.96
		Backup SRAM ON, RTC OFF	0.79	0.81	0.86
		Backup SRAM OFF, RTC OFF	0.10	0.10	0.10

How can the change be seen?

Traceability of the change is ensured by ST internal tools.

- The new revision letter of the die is changed from "Y" to "X". The die revision is marked onto the package of the part.
- The Finish good identification is changed from 32F2xxxx\$X4 to 32F2xxxx\$X5. The Finish good identification is printed onto the labels of the inner box and outer box.

We remain available for any complementary information you may need concerning this change.

With our sincere regards.

Michel Buffa
Microcontroller Division General Manager

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Public Products List

PIL Title : STM32F20x, STM32F21x Low Speed Oscillator consumption reduction

Product Information Letter 7220 update

PIL Reference : MMS-MIC/12/7477

PIL Created on : 10-OCT-2012

Subject : Public Products List

Dear Customer,

Please find below the Standard Public Products List impacted by the change:

ST COMMERCIAL PRODUCT

STM32F205RBT6	STM32F205RBT7	STM32F205RCT6
STM32F205RET6	STM32F205RET6TR	STM32F205REY6TR
STM32F205RFT6	STM32F205RGT6	STM32F205RGT6TR
STM32F205RGT6V	STM32F205RGT6W	STM32F205RGT7
STM32F205RGY6TR	STM32F205VBT6	STM32F205VCT6
STM32F205VCT7	STM32F205VCT7TR	STM32F205VET6
STM32F205VFT6	STM32F205VGT6	STM32F205VGT6J
STM32F205VGT6V	STM32F205VGT6W	STM32F205VGT7
STM32F205ZCT6	STM32F205ZET6	STM32F205ZET7
STM32F205ZFT6	STM32F205ZGT6	STM32F205ZGT6J
STM32F205ZGT6TR	STM32F205ZGT6V	STM32F205ZGT6W
STM32F207ICH6	STM32F207ICT6	STM32F207IEH6
STM32F207IET6	STM32F207IFH6	STM32F207IFT6
STM32F207IGH6	STM32F207IGH6J	STM32F207IGH7
STM32F207IGT6	STM32F207IGT7	STM32F207VCT6
STM32F207VCT7	STM32F207VET6	STM32F207VFT6
STM32F207VFT6TR	STM32F207VGT6	STM32F207VGT6J
STM32F207VGT7	STM32F207ZCT6	STM32F207ZET6
STM32F207ZFT6	STM32F207ZGT6	STM32F207ZGT6J
STM32F207ZGT6TR	STM32F207ZGT7	STM32F215RET6
STM32F215RGT6	STM32F215RGT6TR	STM32F215VET6
STM32F215VGT6	STM32F215ZET6	STM32F215ZGT6
STM32F217IEH6	STM32F217IET6	STM32F217IGH6
STM32F217IGT6	STM32F217VET6	STM32F217VGT6
STM32F217VGT6TR	STM32F217ZET6	STM32F217ZGT6

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