PRODUCT/PROCESS CHANGE NOTIFICATION

PCN MMC-CID/07/2893
Notification Date 09/12/2007

PCN for STW81102

CID - COMMUNICATION INFRASTRUCTURE

Table 1. Change Identification

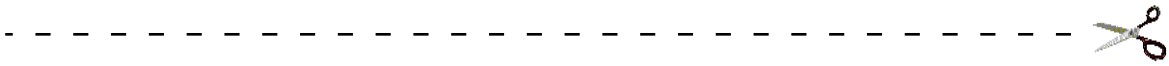
Product Identification (Product Family/Commercial Product)	STW81102AT-B1/ & STW81102ATR-B1/
Type of change	Product electrical spec. change
Reason for change	Limitation found on prescaler 16/17
Description of the change	Usage of prescaler 16/17 is restricted to some frequencies: VCOA »Prescaler 16/17 allowed only for frequencies higher than 3.3GHz. »Prescaler 19/20 allowed over the whole nominal frequency range (3GHz to 3.62GHz). VCOB »Prescaler 16/17 and 19/20 allowed over the whole nominal frequency range (4GHz to 4.65GHz).
Product Line(s) and/or Part Number(s)	See attached
Description of the Qualification Plan	See attached
Change Product Identification	no change
Manufacturing Location(s)	1]St Kirkop - Malta

Table 2. Change Implementation Schedule

Forecasted implementation date for change	05-Sep-2007
Forecasted availabillity date of samples for customer	05-Sep-2007
Forecasted date for **STMicroelectronics** change Qualification Plan results availability	05-Sep-2007
Estimated date of changed product first shipment	05-Sep-2007

Table 3. List of Attachments

Customer Part numbers list	
Qualification Plan results	



Customer Acknowledgement of Receipt	**PCN MMC-CID/07/2893**
Please sign and return to STMicroelectronics Sales Office	**Notification Date 09/12/2007**

☐ Qualification Plan Denied	Name:
☐ Qualification Plan Approved	Title:
	Company:
☐ Change Denied	Date:
☐ Change Approved	Signature:

Remark

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DOCUMENT APPROVAL

Name	Function
Pertinant, Guillaume	Division Marketing Manager
Clerici, Francesco	Division Product Manager
Artuphel, Frederic	Division Q.A. Manager

STW81102
Product Change Notification (PCN)

Prescaler 16/17 usage

STW81102 PCN - Introduction

- Under specific circumstances, the STW81102 prescaler with modulus 16/17 may fail on a small frequency window (~40MHz wide) inside the nominal VCO frequency range:
  - Synthesizer is locking to a wrong frequency.
  - Synthesizer output is noisy when locking at right frequency.
  - The frequency window position is depending on:
    - Process variation
    - Temperature
    - Supply voltage
- STW81102 PCN impact:
  - Usage of prescaler 16/17 is restricted to some frequencies:
    - VCOA:
      - » Prescaler 16/17 allowed only for frequencies higher than 3.3GHz.
      - » Prescaler 19/20 allowed over the whole nominal frequency range (3GHz to 3.62GHz).
    - VCOB:
      - » Prescaler 16/17 and 19/20 allowed over the whole nominal frequency range (4GHz to 4.65GHz).
- The STW81102 prescaler with modulus 19/20 is not impacted.
- The other RF synthesizer family member (STW81101) is not impacted.
- A design improvement has been implemented:
  - Based on preliminary characterization, the prescaler 16/17 limitation is fixed (full qualification is ongoing).
  - Integration of the improved parts will be seamless (pin to pin, SW compatible).

STW81102 PCN – new frequency plan

	STW81102 **Prescaler 16/17**	**STW81102** **Prescaler 19/20**
Direct Output		
VCOA	Original: 3000 – 3620MHz PCN: 3300 – 3620MHz	Original: 3000 – 3620MHz PCN: unchanged
VCOB	Original: 4000 – 4650MHz PCN: unchanged	Original: 4000 – 4650MHz PCN: unchanged
Divided by 2 Output		
VCOA	Original: 1500 – 1810MHz PCN: 1650 – 1810MHz	Original: 1500 – 1810MHz PCN: unchanged
VCOB	Original: 2000 – 2325MHz PCN: unchanged	Original: 2000 – 2325MHz PCN: unchanged
Divided by 4 Output		
VCOA	Original:750 – 905MHz PCN: 825 – 905MHz	Original: 750 – 905MHz PCN: unchanged
VCOB	Original: 1000 – 1162.5MHz PCN: unchanged	Original: 1000 – 1162.5MHz PCN: unchanged

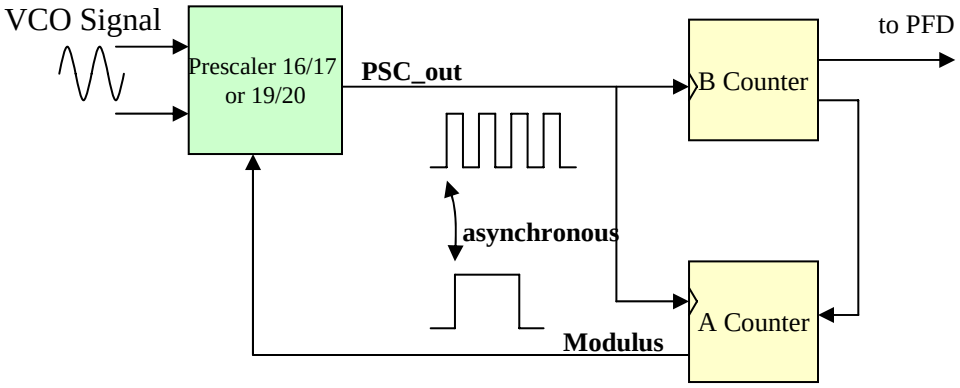
STW81102 PCN – test coverage

- All parts shipped to customers are tested (Wafer test and Final test) and fully compliant to PCN frequency ranges.
- The parts are also tested to be compliant to complete temperature and supply voltage spread (-40 to +85C and 3.0 to 3.6V).

STW81102 PCN
Implementation of an improved design

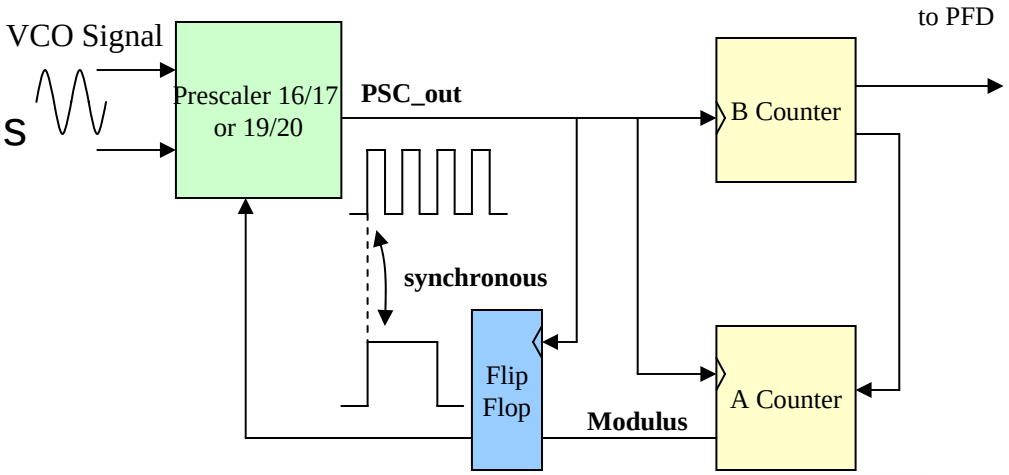
- **A design improvement has been implemented.**
- **Improved design status:**
  - Tape-out released and internal validation and qualification is ongoing.
  - Based on preliminary characterization, the prescaler 16/17 limitation is **fixed.**
- **Improved design: next milestones:**
  - Sampling of tested prototypes: Q407.
  - Preliminary qualified parts (MAT20): Q407.
  - Fully qualified parts (MAT30): Q108.
- **Seamless integration of improved parts:**
  - When fully qualified, the improved parts will replace the current ones.
  - The replacement will be seamless:
    - Pin to pin compatibility.
    - Full SW compatibility.

STW81102 improved prescaler



- **Current version**
  - Modulus control signal asynchronous
  - Potential synchronization issues vs:
    - Process spread
    - Temperature spread
    - Supply voltage spread

- **Improved version**
  - Modulus control signal synchronous
  - Robust design vs:
    - Process spread
    - Temperature spread
    - Supply voltage spread



STW81102 PCN - Summary

- Under specific circumstances, the STW81102 prescaler with modulus 16/17 may fail on a small frequency window (~40MHz wide) inside the nominal VCO frequency range
- STW81102 PCN impact:
  - Usage of prescaler 16/17 is restricted to some frequencies:
    - VCOA
      - » Prescaler 16/17 allowed only for frequencies higher than 3.3GHz.
      - » Prescaler 19/20 allowed over the whole nominal frequency range (3GHz to 3.62GHz).
    - VCOB
      - » Prescaler 16/17 and 19/20 allowed over the whole nominal frequency range (4GHz to 4.65GHz).
- The STW81102 prescaler with modulus 19/20 is not impacted.
- The other RF synthesizer family part number STW81101 is not impacted.
- A design improvement has been implemented to solve this STW81102 prescaler 16/17 limitation:
  - Characterization is being performed one those corrected samples.
  - Based on preliminary characterization, the prescaler 16/17 limitation is fixed.
  - Integration of the improved parts will be seamless (pin to pin, SW compatible).

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