Delta Description LISA-U

Edition 2013

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1 Document Mission/Scope

1.1 Mission

Aim of this document is to describe the differences between system configurations in terms of HW and/or FW and provide analysis of their impact on the system behavior.

1.2 Scope

The document is addressed to the project team and the people involved in the testing and certification of LISA-U family wireless modules.

2 List of Acronyms

Abbreviation / Term	Explanation / Definition
FCC	Federal Communications Commission
FW	Firmware
GCF	Global Certification Forum
HW	Hardware
IC	Industry Canada
IMEI	International Mobile Equipment Identity
PTCRB	PCS Type Certification Review Board
SVN	Software Version Number
UMTS	Universal Mobile Telecommunications System
TCB	Telecommunication Certification Body

3 Affected Products

Product:	2G Bands [MHz]	3G Bands [MHz]	Voice / Data
LISA-U200-04	850/900/1800/1900	800/850/900/1700/1900/2100	• / •
LISA-U201-04	850/900/1800/1900	800/850/900/1900/2100	• / •

4 System Configuration

Current configuration:

Product:	Baseline FW:	Baseline HW	SVN
LISA-U200-03	23.41	146AB2	07
LISA-U201	23.41	214001	07

New configuration:

Product:	Baseline FW:	Baseline HW	SVN
LISA-U200-04	23.41	146DB0	07
LISA-U201-04	23.41	214C00	07

5 Cross reference table: Product vs FCC and IC code

Product	FCC ID	IC code	HVIN
LISA-U200-04	XPYLISAU200	8595A-LISAU200N	LISA-U200-01
LISAU200-03	XPYLISAU200	8595A-LISAU200N	LISA-U200-01
LISA-U201	XPYLISAU201	8595A-LISAU201	LISA-U201
LISA-U201-04	XPYLISAU201	8595A-LISAU201	LISA-U201

6 Delta System Description

6.1 SW Modem changes

No
Same baseline SW

6.2 Hardware Modem change

6.2.1 LISA-U200-04 compare to LISA-U200-03

- Same Form Factor
- Schematics and PCB layout - changes
  - PA new version of the same component, pin to pin compatible and and electrically equivalent component and there is no change to the radio parameters
  - BB RTC 32 KHz Crystal replaced with a pin to pin equivalent from a different manufacturer (for economy of scale)
  - Change of the PCB layout and some passives replaced with equivalent one of different size in order to fit the new Winbond NAND memory combo
    - New System memory Vs old System memory
      - It is an electrically compatible, external dimension differs by 1mm
      - Pin to Pin compatible:No
      - RAM Specification are still by JEDEC
      - Memory speed
        - RAM: As per the relative datasheets, the new memory part (Winbond) allows a maximum clock frequency of 200MHz while the Cypress part is specified for a maximum clock frequency of 166MHz.
        - Flash: Different technologies between new part (Winbond) and old part (Cypress). The new memory part (Winbond) has a NAND flash while Cypress is based on a NOR flash. The NAND minimum write cycle time (tWC) and read cycle time (tRC) are both specified at 35ns. The NOR based flash (Cypress) specifies a minimum clock period of 9.26ns while the minimum write cycle time (tWC) is 60ns.
        -
      - Max clock
        - RAM: The maximum LPDDR1 clock frequency in use is 172MHz. On the previous memory (Cypress), the DDR part in use had the same technology, LPDDR1. In this latter case, the maximum clock frequency used was 160MHz
        - Flash: The measured write and read cycle time for Winbond (NAND) are: tRC = 52ns; tWC=41ns
        - The measured clock period and tWC for Cypress (NOR) are: tclk = 12.5ns; tWC = 330ns
      - Power draw:

        - The power consumption of the module is expected to be the same as before the memory change, seeing that the memory impact on the overall current consumption is negligible at module level
    - Same antenna switch
    - Same RF filters
    - Same reference frequency
    - Same processor (BB)
- Same RF chip
- Modification of the housing:NA
- BOM:
    - Yes except for the componets replaced

6.2.2 LISA-U201-04 compare to LISA-U200

- Same Form Factor
- Schematics and PCB layout - changes
    - Change of the PCB layout and some passives replaced with equivalent one of different size in order to fit the new Winbond NAND memory combo
        - New System memory Vs old System memory
            - It is an electrically compatible, external dimension differs by 1mm
            - Pin to Pin compatible:No
            - RAM Specification are still by JEDEC
            - Memory speed
                - RAM: As per the relative datasheets, the new memory part (Winbond) allows a maximum clock frequency of 200MHz while the Cypress part is specified for a maximum clock frequency of 166MHz.
                - Flash: Different technologies between new part (Winbond) and old part (Cypress). The new memory part (Winbond) has a NAND flash while Cypress is based on a NOR flash. The NAND minimum write cycle time (tWC) and read cycle time (tRC) are both specified at 35ns. The NOR based flash (Cypress) specifies a minimum clock period of 9.26ns while the minimum write cycle time (tWC) is 60ns.
                -
            - Max clock
                - RAM: The maximum LPDDR1 clock frequency in use is 172MHz. On the previous memory (Cypress), the DDR part in use had the same technology, LPDDR1. In this latter case, the maximum clock frequency used was 160MHz
                - Flash: The measured write and read cycle time for Winbond (NAND) are: tRC = 52ns; tWC=41ns
                - The measured clock period and tWC for Cypress (NOR) are: tclk = 12.5ns; tWC = 330ns
            - Power draw:

- The power consumption of the module is expected to be the same as before the memory change, seeing that the memory impact on the overall current consumption is negligible at module level

- Same antenna switch
- Same RF filters
- Same reference frequency
- Same processor (BB)
- Same RF chip
- Modification of the housing:NA
- BOM:
  - Yes except for the componets replaced

6.2.3 SARA-

7 Impact

The following certification schemes will apply

Scope	Impact
FCC / IC	C2PC.
PTCRB	ECO

8 References

8.1 External

None

8.2 Internal

None

9 Document change report

	Change Reference		Record of changes made to previous released version	
Revision	**Date**	**CR**	**Section**	**Comment**
1.0	30/05/2019	NA	ALL	Document Created
2.0	07/08/2019	NA	ALL	Document Created
3.0	05/09/2019	NA	ALL	Document Created

10 Approval

Revision	Approver(s)	Date	Source/signature
1.0	Giulio Comar	30/05/2019	Document stored on server

2.0	Giulio Comar	07/08/2019	Document stored on server
3.0	Giulio Comar	05/09/2019	Document stored on server