

PCB DESIGN AND VERIFICATION FLOW (FOR DDR-IF)

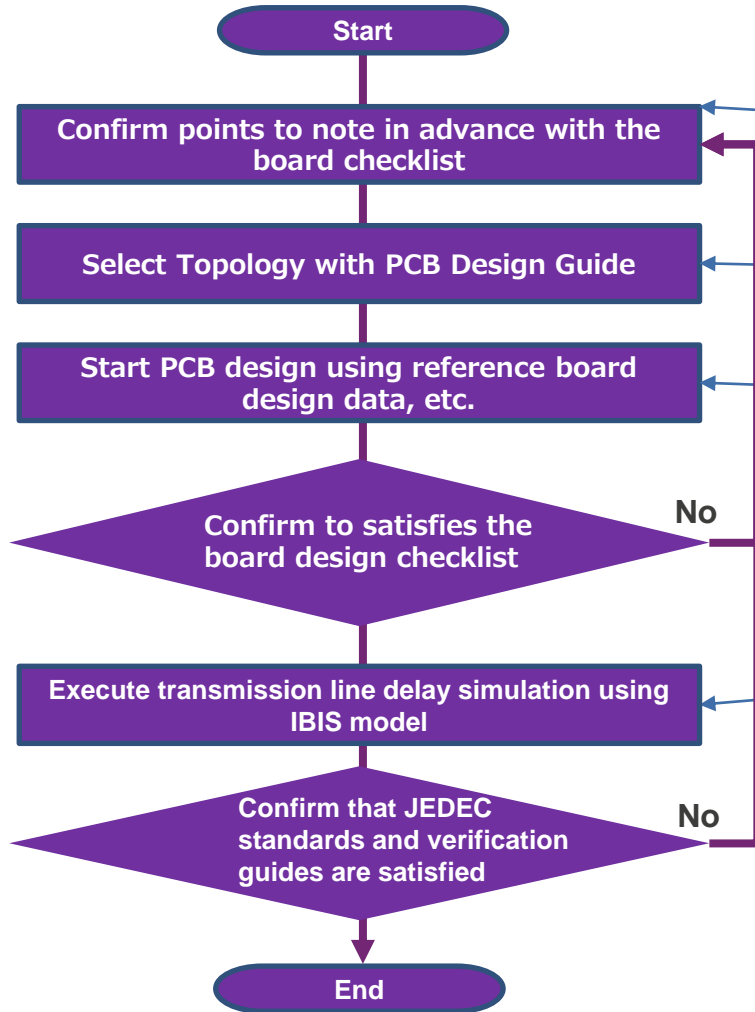
FLOW GUIDELINE (FOR CUSTOMER)

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MPU BUSINESS DEVELOPMENT DEPARTMENT
ENTERPRISE INFRASTRUCTURE BUSINESS DIVISION
IOT & INFRASTRUCTURE BUSINESS UNIT
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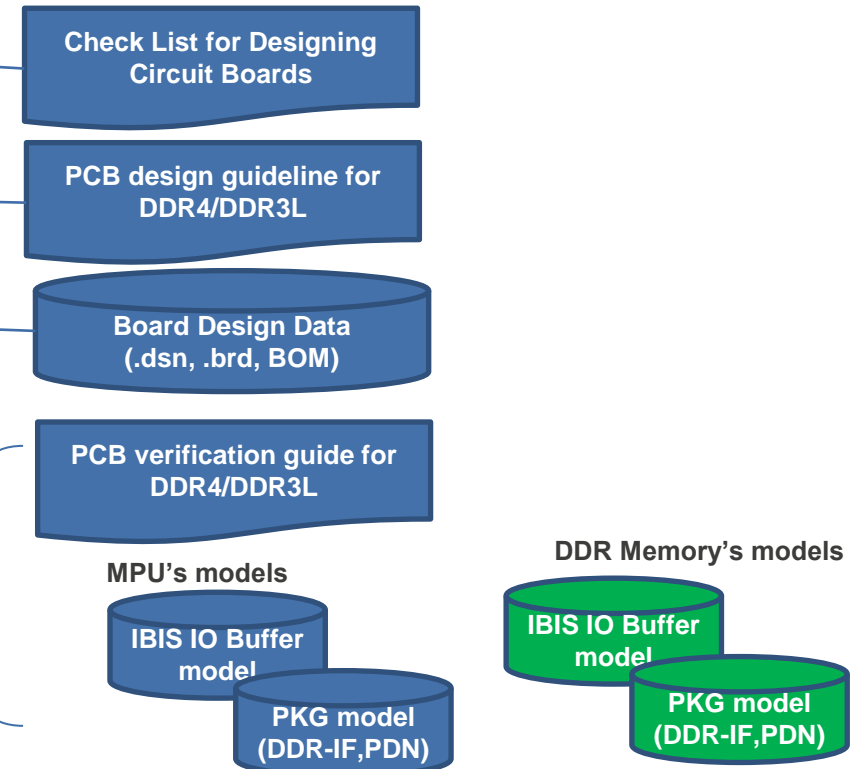
PCB DESIGN PHASE FOR DDR-IF PART

HOW TO USE HW DESIGN GUIDE AND MODEL



Items to be referenced

:From Renesas
 :From 3rd party



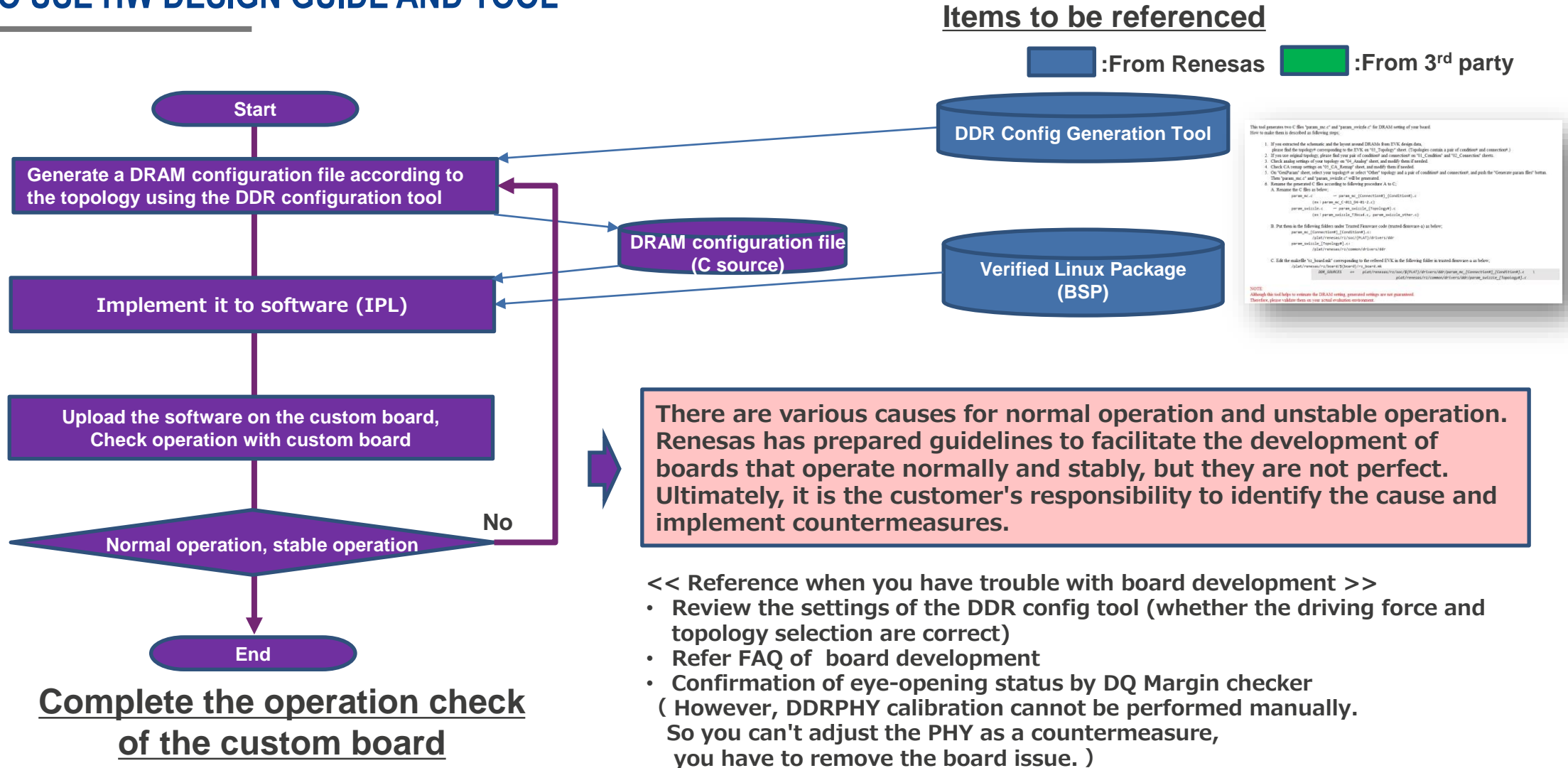
[Important point]

If the DDR memory is changed, it is necessary to run the simulation again. Even with the same memory vendor, re-simulation is necessary for products that change. (This is because the internal memory structure and PKG LCR change.)

Custom board trial production started → Operation check after completing the board(See next page)

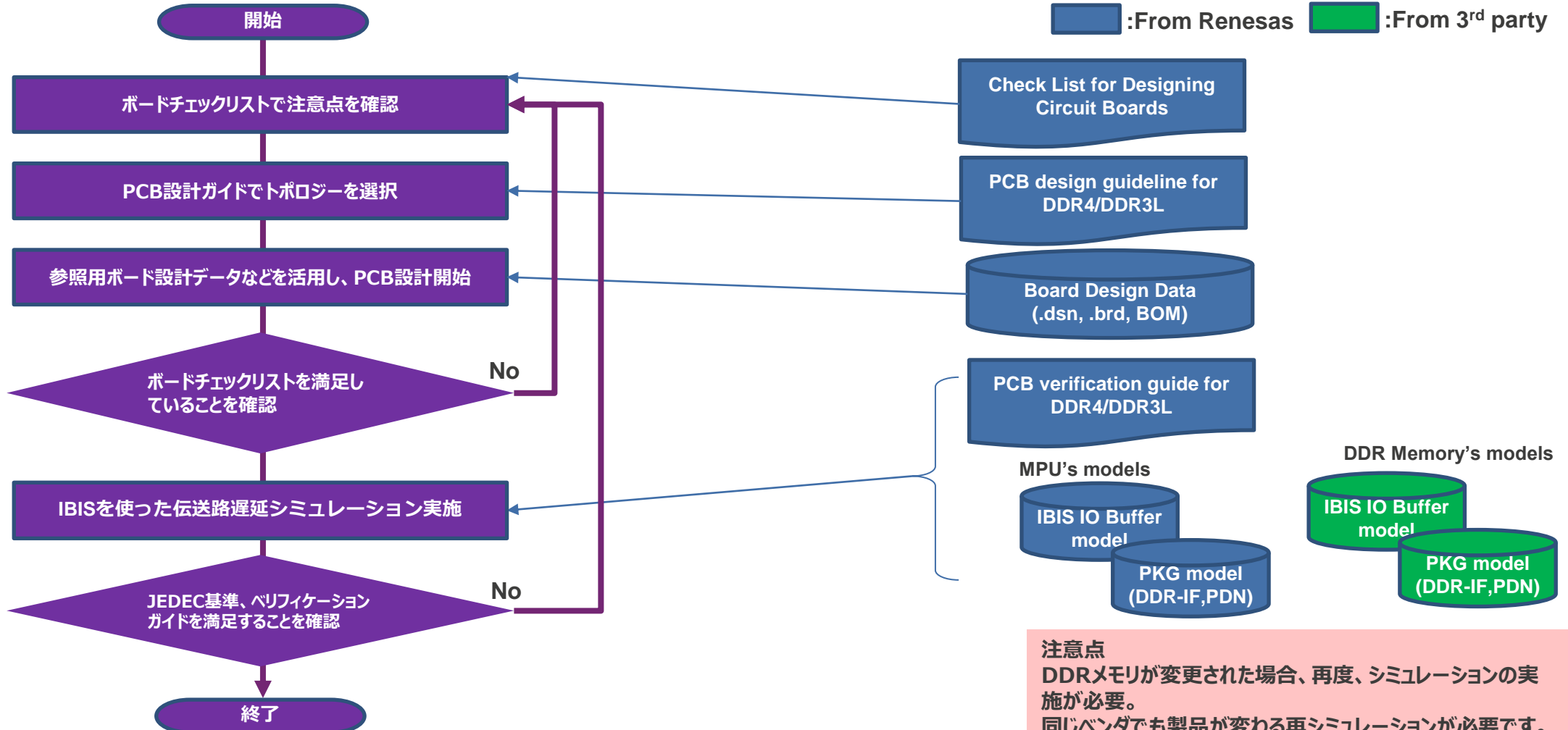
OPERATION CHECK OF CUSTOM BOARD FOR DDR-IF PART

HOW TO USE HW DESIGN GUIDE AND TOOL



PCB DESIGN PHASE FOR DDR-IF PART

HOW TO USE HW DESIGN GUIDE AND MODEL



カスタムボード試作開始 → 完成後、動作確認(次ページ参照)

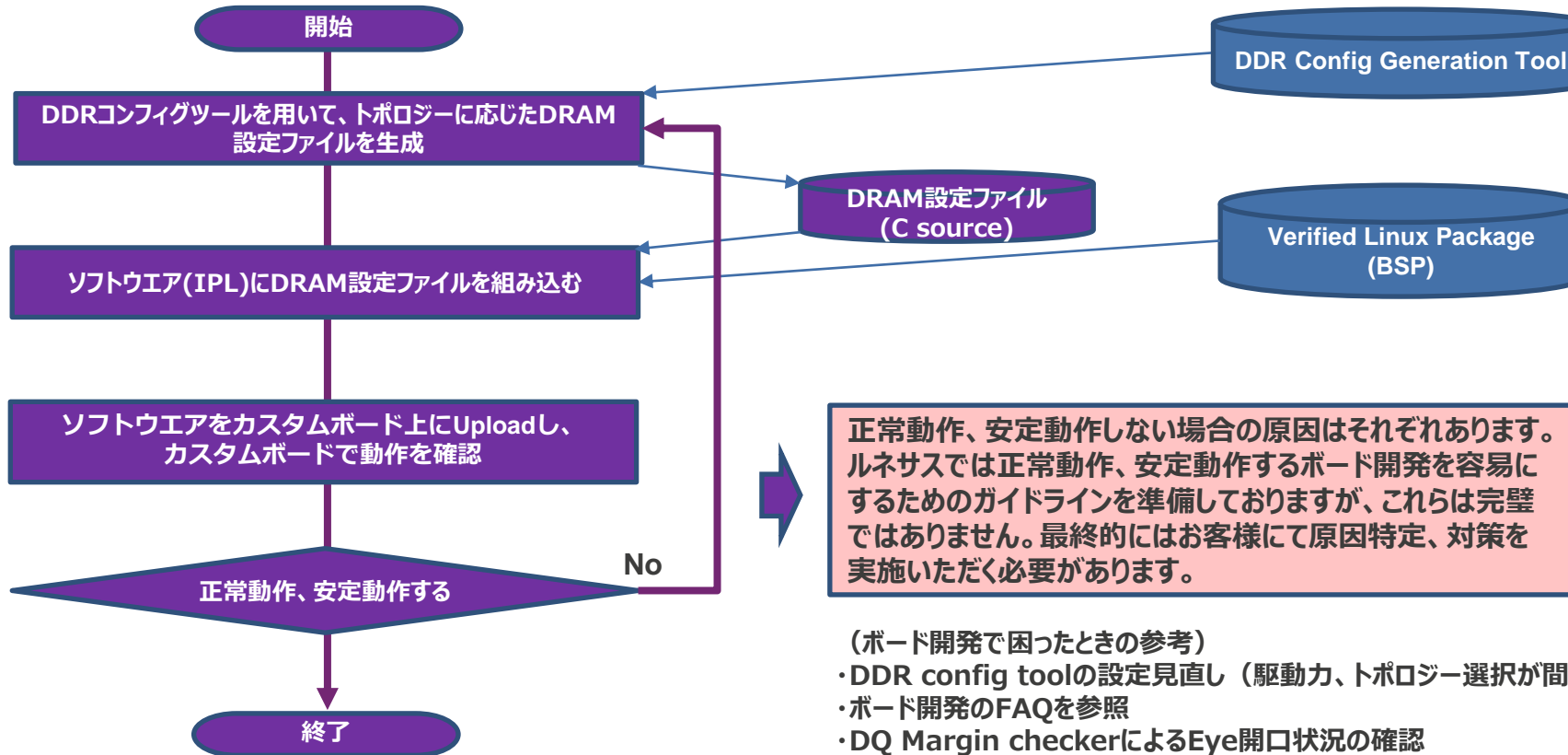
注意点
DDRメモリが変更された場合、再度、シミュレーションの実施が必要。
同じベンダでも製品が変わる再シミュレーションが必要です。
(メモリ内部の構造や、PKGのLCRが変わるため)

OPERATION CHECK OF CUSTOM BOARD FOR DDR-IF PART

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■ :From Renesas ■ :From 3rd party



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This tool generates two C files: "system_mmc.c" and "system_mmc2.c" for the DRAM setting of your board.
Here is an example of the generated code:

1. If you generated the schematic and the system board DRAMs from EPC, design data,
please find the topology corresponding to the EPC in "Topology" sheet. (Topology contains a pair of condition and connector.)
2. If you use original topology, please find your pair of condition and connector in "Vc_Condition" and "Vc_Connector" sheets.
3. Check module settings of your topology on "Vc_AutoPop" sheet, and modify them if needed.
4. Check C file settings on "Vc_Ck_AutoPop" sheet, and modify them if needed.
5. On "VcAutoPop" sheet, select your topology as select "Other" topology and a pair of condition and connector, and push the "Generate param file" button.
Then "system_mmc.c" and "system_mmc2.c" will be generated.
6. Rename the generated C file according to following procedure A to C.
A. Rename for C file as below:
system_mmc.c --> param_mmc_connected1_condition.c
system_mmc2.c --> param_mmc2_connected1_condition.c
B. Put items in the following files under "Trained Firmware code (trained firmware)" as below:
param_mmc_connected1_condition.c
param_mmc2_connected1_condition.c
C. Edit the makefile "Vc_board.mk" corresponding to the referred EPC in the following files in trained firmware as below:
system_mmc_connected1_condition/Vc_board.mk
system_mmc2_connected1_condition/Vc_board.mk

NOTE:
Although this tool helps to enhance the DRAM setting, generated settings are not guaranteed.
Therefore, please confirm them on your actual production environment.
  
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正常動作、安定動作しない場合の原因はそれぞれあります。ルネサスでは正常動作、安定動作するボード開発を容易にするためのガイドラインを準備しておりますが、これらは完璧ではありません。最終的にはお客様にて原因特定、対策を実施いただく必要があります。

- (ボード開発で困ったときの参考)
- DDR config toolの設定見直し (駆動力、トポロジー選択が間違っていないか)
 - ボード開発のFAQを参照
 - DQ Margin checkerによるEye開口状況の確認 (ただし、DDRPHYのCalibrationはManualでは実行できません。そのため、対策としてPHYを調整することはできないため、ボードの問題を取り除く必要があります。)

カスタムボード動作確認完了

[Renesas.com](https://www.renesas.com)