

PCN Assessment Sheet Tutorial

Version	Date	Note
1.0	2022/4/1	First edition

Overview

PCN Assessment Sheet is a tool that describes the evaluation level and tests for changes in the manufacturing process.

- Used as a communication tool for semiconductor makers, ECU makers, and Car makers.
- This document follows the international standards (such as AEC Q10x, IEC 60810, and ZVEI).

The evaluation item matrix which is based on the ZVEI – Delta Qualification Matrix (DeQuMa) is to identify the impact by the change points and evaluation items.

Base on the following contents, it will clarify the scope of evaluation required for change approval and applicable tested product(s).

- Connection between the change points from 4M1E point of view and evaluation items
- Visualization of the impact of the changes on ECU and systems in the table “Confirmation of design changes due to product changes”
- Connection between evaluation results / production results under changed manufacturing conditions and evaluation items required for PCN.
- Connection between combination element, actual result, failure mechanism, representative product, and evaluation items

Purpose

- Optimization of evaluation item selection based on failure risk due to the process change
- Throughput improvement, man-hour reduction for PCN preparation by using a common form
- Reduction of time and effort required for PCN evaluation

1. Confirmation of changes points due to production related changes (1/2) PCN Assessment Sheet

*There are two types of PCN Assessment Sheets: "Front End" and "Back End (includes Test and following process)". Make sure to use the applicable sheet.

PCN Assessment Sheet (BE)

Application PCN

1-1

1-6

1. Verification of Change point for production (BE)

Reason of change	Production experience in transfer site	Technical aspect	Change details	change items					
				Man	Machine	Material	Method	Environment	
1-2	1-3	1-4	1-5	Operator skill degradation (Yes/No)	Tool change (Yes/No)	change (Yes/No)	change (Yes/No)	change (Yes/No)	change (Yes/No)
Description Guide			Use item from pulldown menu for "Change details" If "Others" is selected, describe details in "Additional comment for change contents"	Describe "C (Change)", "E (Equivalent)" or "N (No change)" for change or experienced status (Describe explanation for change contents with number (*#), if additional comment is needed)					
Stable product supply	Production experience for Automotive products yyyy/mm ~ Over xx Mpcs	BE_common	Site change	*1	E (Equivalent) *2	E (Equivalent) *1	C (Change) *3	C (Change) *3	E (Equivalent) *4
		Wire_bonding	Change bonding wire material change (Au => Cu)	*3	E (Equivalent) *2	C (Change) *3	C (Change) *3	C (Change) *3	E (Equivalent) *4
		1-7	Additional comment for change contents [a] Experienced Automotive production *1 Comment: OSAT (plant B) is added to the current assembly plant A. Plant B is IATF 16949 certified. Long business relations with the OSAT and outsourcing management has been implemented. Equivalent Process/Machines except the wire material change. *2 [a] Experienced Automotive production Comment: Equivalent training system is available. *3 [a] Experienced Automotive production Comment: Bonding wire material is changed from Au to Cu. Dedicated bonding machine is used for Cu wire. Not new technology. Over 1 billion parts of products with the same process/package with Cu wire have been shipped and no quality defect related with the Cu wire has occurred as of *4 [a] Experienced Automotive production Comment: Same ISO cleanliness standard						

1-1) Select "PCN" or "PCI" referring to the "List" sheet

1-2) Select "Reason of Change" from the drop-down lists. If "Others" is selected, add a comment No. in 1-5) & 1-6) and write explanatory comments on 1-7).

1-3) Write production experience

1-4) Select "Technical aspect" from the drop-down lists. If there is no applicable one, select "Others" and write change details in the 1-7) "additional comment".

1-5) Select "Change details" from the drop-down lists. If additional explanation is required, add a comment No. and write comments on 1-7).

1-6) As to 4M1E change points, select from "C" for Change "E" for Equivalent "No" for No-change Refer to the "4M1E STD" sheet for each definition.

1-7) Write additional comments for 1-2 to 1-6. Link each comment No. to the No. added in 1-5) and/or 1-6). If "E" for Equivalent is selected in 1-6), make sure to write its justification.

*The above is a sample from the "Back End" sheet

2. Confirmation of design changes due to production changes

2a. Verification of Change point for design (BE)

Function	Specification category	Item	Parameter	2a-2			2a-3			2a-4			2a-5			2a-6		
				Specification change (Yes/No)	Comment	Need of change impact verification (Yes/No)	Comment	Need of correction impact verification (Yes/No)	Comment	Electrical characterization	Comment	Electrical characterization	Comment	Assessment result (Electrical characterization (Equivalency check after correction))				
Electrical characterization	Specification	AC	Frequency	No		No		No		Yes	*1	OK						
			Output	No		No		No		Yes	*1	OK						
		DC	Breakdown voltage	No		No		No		Yes	*1	OK						
			Leakage	No		No		No		Yes	*1	OK						
			Flash memory characterization	Write/erase time	No		No		No									
	Data retention time	No		No		No												
Reference	EMC	Equivalency	No		No		No		Yes	*2	OK							
Additional explanation		*1 Electrical Characterization data is confirmed and the data is attached for your review. *2 EMC evaluation was performed due to the wire material change and the result is attached for your review.																

2a-1) Write other critical parameter from the Data Sheet besides the electrical characteristics (AC, DC) if any. (Add more depending on the change points and the subject product)

2a-2) If any specification change occurs on the parameter, select “Yes”, if not select “No”. If “Yes” is selected, add a comment No. and write explanation in 2a-7).

2a-3) If the process change affect the parameter, select “Yes”, if not select “No”.

2a-4) If “Any correction to mitigate the change risk in product” occurs in 1-8), select “Yes” in the applicable parameter. If not applicable, select “No”. If no correction in 1-8), “No” should be selected in all items.

2a-5) If electrical characterization is confirmed using samples, select “Yes” in the applicable parameter. If not, select “No”.

2a-6) If “Yes” is selected in any parameter in 2a-5), write electrical characterization results selecting by “OK” or “NG”. The actual confirmation results need to be submitted as summarized evidence documents. If the result is not yet available at the time of planning announcement, provide the expected completion date.

2a-7) If “Yes” is selected in 2a-2) to 2a-5), add a comment No. in the applicable item and provide additional explanation in 2a-7).

2a-7

