



UTAC Manufacturing Service Indonesia

-- EAL6 & CQM --



TOYOTA ALPHARD



EAL 6

Evaluation Assurance Level –Tingkat 6

Evaluasi Jaminan Tingkat Keamanan Material (EAL 1 sampai EAL 7) dari produk atau sistem yang harus mengikuti penyelesaian evaluasi keamanan material (EAL).

Standar internasional yang berlaku sejak tahun 1999.

Maksud dan Tujuan Pengontrolan Keamanan (EAL 6) :

Untuk memberikan jaminan keamanan produk dari kedatangan sampai pengiriman ke pelanggan dengan aman sesuai dengan keinginan pelanggan.

Production Security Management

- Security product selama proses produksi harus memenuhi kaidah ZERO BALANCE
- Dari proses wafer incoming sampai proses shipping pada setiap proses perpindahan WIP harus dilakukan oleh antar operator untuk memenuhi kaidah FOUR EYES
- Semua produk harus dalam pengawasan monitor selama 24 jam

ZERO BALANCE

adalah kondisi dimana aktual produk antara sebelum dan sesudah proses quantity nya harus sama



Apabila ditemukan ketidakcocokan data:
1. Stop Proses dan
2. Segera laporkan ke Atasan

FOUR EYES

adalah kaidah dimana saat transfer/perpindahan produk dari satu station ke station yang lain, PIC yang mengantar dan menerima harus saling bertatap muka dan ada bukti serah terima



KEAMANAN EAL6

EAL6 merupakan suatu jaminan terhadap keamanan material yang diproses, hal ini dapat kita bagi menjadi 2 keamanan :

1. System keamanan terkait Pekerja
2. System Keamanan terkait Material



1.SYSTEM KEAMANAN PEKERJA

Yang dimaksud dengan System keamanan terkait pekerja adalah Sebuah sistem yang berfungsi untuk melindungi material dari tindakan atau perbuatan yang tidak diperbolehkan dari pekerja atau orang asing (diluar pekerja).

Beberapa Poin yang dapat dilakukan :

a.Finger print

System deteksi pekerja dengan menggunakan deteksi jari tangan.Biasa Digunakan pada Pintu masuk



b.Turnstile System

System yang digunakan untuk mencegah adanya Tail gate / mengekor dari pekerja maupun orang Asing



c. Camera CCTV

Untuk memonitoring pergerakan Material dari awal hingga pengiriman material



2.SYSTEM KEAMANAN MATERIAL

Yang dimaksud dengan System keamanan terkait Material adalah Sebuah sistem memastikan keamanan material dari awal Bahan baku dikirim kemudian di proses sampai barang dikirim ke konsumen.

Beberapa poin yang harus dilakukan :

a.Zero Balance

Jumlah material sebelum proses harus sama dan cocok dengan jumlah material GOOD dan Reject selesai Proses.

b.Four Eyes

Pada saat pengiriman material ke proses berikutnya pic yang mengirim material harus bertemu / Empat mata dengan pic yang menerima



c. Security Door

Pintu yang digunakan untuk menyimpan material
Di kunci dan Anak kunci disimpan dengan aman dan
ada pengontrolan



d. Security Trolley

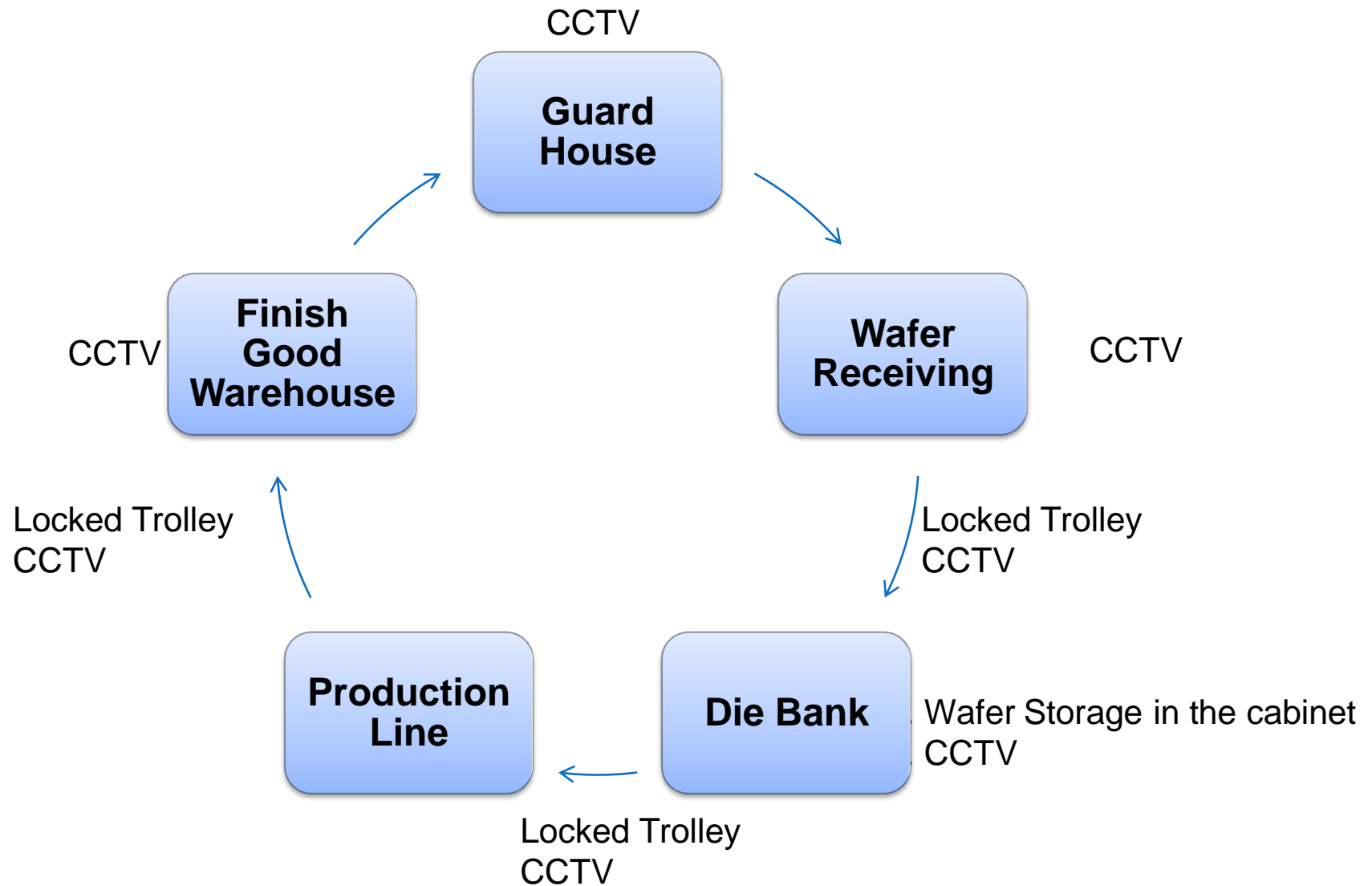
Trolley yang digunakan untuk mengambil material dan
mengirim material dikunci dan anak kunci disimpan
dengan aman dan ada pengontrolan



SECURITY TROLLEY TERKAIT EAL6				
NO	NAMA TROLLEY	KODE KUNCI	PHOTO	
1	SECURITY TROLLEY	ST- 1 (PROD) ST- 2 (FG/WH)		
2	TROLLEY SKELETON WAFER	TSW-1		
3	TROLLEY SCRAP PRODUK	TSC-1		
4	TROLLEY WAFER SMARTCARD	TWS-1		

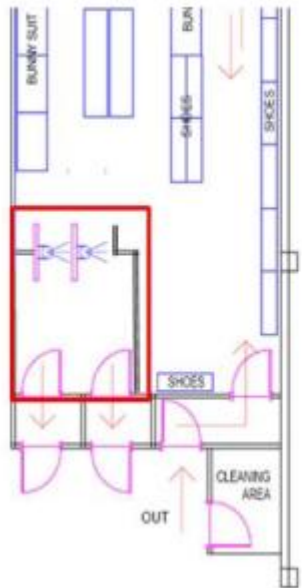
PASSING DOOR FAC.C TERKAIT EAL6			
NO	NAMA PASSING DOOR	KODE KUNCI	PHOTO
1	PASSING DOOR 1	PD - 1.A (SISI LUAR) PD - 1.B (SISI DALAM)	 
2	PASSING DOOR 2	PD - 2.A (SISI LUAR) PD - 2.B (SISI DALAM)	 
3	PASSING DOOR 3	PD - 3.A (SISI LUAR) PD - 3.B (SISI DALAM)	 

EAL 6 Security Control for Secure Product



EAL6 Production Area

Turnstile & fingerprint Access



type pagar bahan stainless (model seperti gambar)
panjang total pagar : 417 cm
tinggi pagar : 95 cm
diameter bahan utama : 2 inchi / 5 cm .

Storage Cabinet with locking



Arm Band for Operator Smartcard



Storage FG with locking & Burglar Alarm



EAL6 Production Area

Four Eyes Contact System



All Passing Doors with locking



Production Area with CCTV



Zero Balance System



Apabila ditemukan ketidakcocokan data:
1. Stop Proses dan
2. Segera laporkan ke Atasan

Trolley with locking



Security System Asessment

-Contoh temuan-

Area Passing Door



Scurity trolley



Area Die Bank



Pintu tidak di kunci



**Wafer Smart Card
tidak memakai
Secure Trolley**

Area Changing Room



Masuk dari kolong / bawah turnstile



Masuk melewati celah pagar turnstile



Membantu membukakan pintu turnstile ke orang lain



Tailgating / Mengekor

Production Area



Pemakaian Bunny Suit tidak sesuai dengan namanya

Production Area



**Reject Unit tidak terkontrol dan
identifikasi; skeleton produksi dan AE
*Lebih dari 1 tahun***

Production Area



Handphone Pribadi dibawa ke dalam area

MATERI TRAINING

SMART CARD

CARD QUALITY MANAGEMENT

(CQM)



Prepared by : HADI & MUHTAROM ASIDIQ (PRODUCTION
TRAINING)

CQM (Card Quality Management)

adalah bagian dari Proses Persetujuan MasterCard .

Sebuah MasterCard «Sertifikasi» dikeluarkan untuk chip kartu atau vendor perangkat untuk setiap kartu chip atau perangkat yang telah berhasil menyelesaikan semua hal berikut:

1. Pengujian Aplikasi (IAT)
2. Penilaian Kepatuhan dan Pengujian Keamanan (CAST)
3. Kartu Manajemen Mutu (CQM).

PENGERTIAN CQM

1.CQM itu similar / Mirip dengan ISO9001

jika bicara ISO9001 (Dokumentasi) mudahnya adalah apa-apa yang sudah dilakukan saat ini baik secara administrative ataupun diproses pembuatan produk.

Contoh Aplikasi di pekerjaan :

- a.Kerja mengikuti WPI/Prosedur yang sudah ada,
- b.Memberikan identifikasi pada proses pembuatan produk misalknya lot sheet dll,
- c.Proses Spesifik sesuai apa yang diminta untuk produk SmartCard.

PENGERTIAN CQM

2.CQM itu similar / Mirip dengan TS16949

mudahnya misalnya :

- a.kerja mengikuti Control Plan atau PCC,
- b.melakukan analisa dengan FMEA (engineering),
- c.ada control terhadap Critical Point product atau proses misalnya dengan SPC.

3.Adanya physical control

Mudahnya misalnya :

- a. Zero Balance
Jumlah material antara Data dan aktual harus sama dan cocok

4.Pembatasan Akses

Pembatasan dan pendataan akses pekerja,hanya orang-orang tertentu dan teregistrasi yang bisa masuk atau melakukan proses produksi.

5.Competency terkait Qualifikasi

Pekerja / operator memiliki Qualifikasi untuk melakukan proses Material

6.Pemenuhan spesifikasi-spesifikasi produk sesuai standard SmartCard product.

Produk yang dibuat dan dihasilkan harus sesuai dengan Spesifikasi yang telah ditetapkan untuk material Smart Card

Contoh Dokumen


1.WPI (Work Point Intruction)

Work Point Instruction (Cover)		[Pekerjaan Berbahaya ?] Ya / Tidak	<table border="1"> <tr> <th>Pengetujuan</th> <th>Nama</th> <th>Jabatan/Fungsi</th> <th>Halaman</th> </tr> <tr> <td>Dibuat</td> <td>Dodik Bintoro</td> <td>Prod. Leader</td> <td rowspan="5">1/24</td> </tr> <tr> <td>Diperiksa</td> <td>Henry Ronaldo</td> <td>Prod. SPV</td> </tr> <tr> <td>Ditetujui</td> <td>Nugroho SP</td> <td>Prod Manager</td> </tr> <tr> <td>Konfirmasi Form</td> <td>Fibi Liana Sari</td> <td>Docen Staff</td> </tr> <tr> <td>Konfirmasi Export Control</td> <td>Iping Arifin</td> <td>ECC Komite</td> </tr> <tr> <td colspan="2">Nomor Dok. (ID) : G12Ec8-0028</td> <td>Diketahui</td> <td>Stephany Henry</td> <td>Sr. QC SPV</td> <td></td> </tr> <tr> <td colspan="2">Revision Number : 01</td> <td></td> <td>Molas Sewarto</td> <td>MH</td> <td></td> </tr> </table>	Pengetujuan	Nama	Jabatan/Fungsi	Halaman	Dibuat	Dodik Bintoro	Prod. Leader	1/24	Diperiksa	Henry Ronaldo	Prod. SPV	Ditetujui	Nugroho SP	Prod Manager	Konfirmasi Form	Fibi Liana Sari	Docen Staff	Konfirmasi Export Control	Iping Arifin	ECC Komite	Nomor Dok. (ID) : G12Ec8-0028		Diketahui	Stephany Henry	Sr. QC SPV		Revision Number : 01			Molas Sewarto	MH	
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[Proses] DIE BOND SMART CARD	[Mesin Yang Digunakan] ESEC-2008	[Nama/nomor prosedur/standar yang berhubungan] WPI Ganti syringe / G12EC1 - 033B WPI Pengecekan wafer mapping / WPI Pengecekan release agent /	[Kesalahan Yang Mungkin Terjadi] 1. Wrong orientasi substrate 2. Wrong orientasi wafer 3. Wrong process diffusi wafer																																
[Judul] PROSEDUR PENGOPERASIAN MESIN DIE BONDING ESEC-2008	[Maker] ESEC ESA CHAM MACHINERY INC.																																		
[Gambar atau Foto] Gambaran Umum		Definisi: Proses penempelan chip wafer pada Lead frame dengan menggunakan Glue 1. LOADER Tempat memasang dan meletakkan reel material Substrate sebelum proses. 2. LOADER WAFER Tempat untuk meletakkan magazine cassette & wafer sebelum proses Die Bonding 3. Monitor LCD Sebagai panduan untuk melakukan Control pergerakan secara manual dari mesin dengan bantuan Mouse. 4. DISPENSER Alat untuk mengeluarkan Glue dari syringe untuk proses pembondingan Glue pada Die pad. 5. EXPANDER Tempat meregangkan material yang masih menempel di UV Sheet 6. CONVEYOR & GLUE AREA Jalur yang dilewati material dari mesin menuju Die Bond Cure & tempat holder syringe 7. DIE BOND CURE Tempat pemanasan material untuk mendapatkan kerekatan Glue yang maksimal(kuat). 8. UNLOADER Tempat menggulung material setelah proses ke reel after proses Cure 9. TOMBOL CONTROL MESIN Tombol-tombol yang berfungsi sebagai pusat pengontrolan mesin dalam proses manual (second hand).																																	
[Lingkungan Kerja] (e.g. DI water, Power supply or N2 gas etc.) Power supply : 220 Volt		[Jig] 1. Reel Aluminium	[Material] 1. Substrate 2. Glue 3. Protector tape	[Peralatan Pelindung (MKSL)] N/A																															

Uncontrolled document after printed. (The second original by "Controlled Document" stamp of Document Controller)

Contoh Dokumen

2.Lotsheet

CONTROL : G12K-084A		LOT SHEET SMARTCARD	
 Process Traveler			
LOT ID: LT22C15A120003		*LT22C15A120003*	
PO NO:			
Lot Type	:EL	Package Type	:Contact 6
Prod Mode	:ENGINEERING	Device	:SA00259U11E-365
PART CATEGORY		LOT INFORMATION	
Customer	:IS3	Build Order#	:SAMP1502
Product Family	:SMART CARD	Work Order#	:
Product Grade	:SA00259U11E-365	Parent Lot No	:UAAJ0001.1
Packing Type	:1	Lot Qty	: 8940
Bin No	:TAPE and REEL	Wafer Slice	:
UTAC Package	:Contact 6 gold	Source Lot ID	:AAS60001.1
		Flow Type	:FULL_TURNKEY
		No Diffusion	:
		Bonding Diagram	:
		POD Reference	:
		New CustLot ID	:
		Cust unique ID	:30/10/2015 12:00:00AM
WAFER INFORMATION			
Wafer Lot No	:QMSJ		
	QMSJ		
Wafer Map	:1		
Bin No	:1		
Wafer Size	:8		
Foundry	:UMC-FABED		
COO (Wafer)	:		
COO (Assembly)	:		
Die Revision	:1.1		
Net Die per wafer	:9000		
Start Wafer Qty	:3		
Current Wafer ID	:QMSJ		
Mask Id	:		
Stamping Code	:		
Machine Lot Size	:		
PART DESCRIPTION			
Cust Device		:MP2323_6C_Gold_UIDG	
MP (PN)		:	
Cust O/P (CPN)		:SA00259U11E-365	
Cust Package		:B-MM055_A	
Package Size		:30.6X8	
SPECIFIC PROCESS INSTRUCTION			
Chip & Glue Thickness	:	#1	#2
	:	#3	#4
Chip for Watability	:	Lead frame no die	Reject from Supplier
Wafer ID	#	#	#
Good Die Qty			
Input Qty			
Chip Recd			
Ink / Bad Die Qty			
Bad Die Pick up			
Remarks			

Contoh Dokumen

2.Control Plan

PT UTAC MANUFACTURING SERVICES INDONESIA										CONTROL PLAN										General Control		Notes		Revision					
Product Name/No					Drawing No.					Date / Rev					Customer Name / Project					Control Method		Frequency		Acceptance Criteria		Inspection Point		Inspection Method	
Part Name/Description / Component type					Part Name					Customer Name / Project					Customer Name / Project					Control Method		Frequency		Acceptance Criteria		Inspection Point		Inspection Method	
Part Name/Description / Component type					Part Name					Customer Name / Project					Customer Name / Project					Control Method		Frequency		Acceptance Criteria		Inspection Point		Inspection Method	
Part Process Number	Process Name / Operation Description	Process Flow			Machine, Device, Jig/Tool for	Inspection Points			Special Char. Class	Inspection / Measurement Technique				Sample	Frequency	Control Method	Reaction Plan												
		Start	Process	End / Storage		SI	Position	Process		Product Process Identification/Reference	Inspection / Measurement Technique	SI	Frequency																
1	RECEIVING VISUAL INSPECTION				Human Work	1	Water Picking Appearance			Refer to Incoming Water report Criteria	Naked eyes	At least 100%	Every alignment	Material WH	Recount Sheet	Follow Abnormally Handling Procedure													
						2	Water Appearance			Refer to Incoming Water report Criteria	1. Naked eyes 2. Microscope	1. 100% 2. 10 points/lot water 3. rate : 2 times 4. rate : 2 times	Every alignment	PC	Checklist (Standard Incoming)	Follow Abnormally Handling Procedure													
						3	Lead Frame Tape Picking Appearance			Refer to Incoming Water report Criteria	Naked eyes	At least 100%	Every alignment	Material WH	Recount Sheet	Follow Abnormally Handling Procedure													
						4	Top Lead Frame Tape Appearance			Refer to Incoming Water report Criteria	Visual Microscope	200px/500.000px	Every alignment	PC	Checklist (Standard Incoming)	Follow Abnormally Handling Procedure													
						5	New Lead Frame Tape Appearance			Refer to Incoming Water report Criteria	Visual Microscope	200px/500.000px	Every alignment	PC	Checklist (Standard Incoming)	Follow Abnormally Handling Procedure													
2	DIE BOND				BONDING MACHINE	1	Die Coverage			>70 % glue wetting rate	Feed off tester	2 point/lot	Every starting new lot	Operator	Lot Sheet (Substrate Standard)	Call RM to repair													
						2	Die-Glue Thickness			Open 50-500 µm	Optical microscope scope	4 point/lot	Every starting new lot	Operator	Lot Sheet (Substrate Standard)	Call RM to repair													
						3	Die Bonding Appearance			Refer to Die Bonding Report Criteria	Visual Magnifier	4 point/lot top and bottom side	So lot	Operator	Checklist (MPG Specs)	Follow OCAP													
							Release agent Condition			No dried position, no over or insufficient width	Ag	4 point/lot	Every starting new lot	Operator	Checklist (MPG Specs)	Follow OCAP													
						4		Water Mapping Loading		Refer to WFI Preparation Water Mapping	Naked eyes	At least 100%	Every beginning process	Operator	Checklist (MPG Specs)	Recheck the mapping file with the correct one													
						5		In Use Cure Temperature Setting		160 ± 10 °C	Surface Thermometer	2 points/lot machine	Every start-up / after conversion set up	PC	Checklist (MPG Specs)	Call RM to re setting the Temperature													
						6				According to Die Bond Parameter table	Machine Display	2 points/lot machine	Every starting new lot (MC Display)	Operator	Checklist (MPG Specs)	Call RM to re setting the Temperature													
						6		Die Bond Parameter Setting		According to Die Bond Parameter table	Machine Display	Each machine	Is / hold or after conversion set up	Operator	Checklist (MPG Specs)	Call RM to re setting the Parameter													
						7		Lead Frame Pin Cleanliness		No remained foreign material	Naked eyes	Each machine	Every starting new lot	Operator	Checklist (MPG Specs)	Clean lot													
						8		Die Nozzle and Padder tip Cleanliness		No dried, no bent and no remained foreign material	Naked eyes	At least 100% and Padder tip checked	Every starting new lot	Operator	Checklist (MPG Specs)	Clean inside and outside													
3	WIRE BOND				BONDING MACHINE	1	Wire Loop Height			Loop Height 1. 10µm ± 10 µm Loop Height 2. 10µm ± 10 µm	Measurement Microscope	8 wires from 2 point/lot	Every starting new lot / after conversion set up	Operator	Lot Sheet (Substrate Standard)	Call RM to repair													
						2	Wire Pin Through Test			Refer to Wire Bond report Criteria Open : 0.5 µl	Wire Pin tester	4 wires from 2 point/lot	Every starting new lot / after conversion set up	Operator	Lot Sheet (Substrate Standard)	Call RM to repair													
						3	Ball Wire Strength Test			Refer to Wire Bond report Criteria Open : 20 µl	Ball Wire tester	4 wires from 2 point/lot	Every starting new lot / after conversion set up	Operator	Lot Sheet (Substrate Standard)	Call RM to repair													
						4	Wire Bond Appearance			Refer to Wire Bond Report Criteria	Visual	20 point/lot top and bottom side	Every starting new lot / after conversion set up	Operator	Checklist (MPG Specs)	Follow OCAP													
						5		Bond Heater Temperature		160 °C	Machine Display	2 points/lot Each machine	Every Lot (MC Display)	Operator	Checklist (MPG Specs)	Call RM to re setting the Temperature													
										160 °C	Surface Thermometer	2 points/lot Each machine	1 time / day	PC	Checklist (MPG Specs)	Call RM to re setting the Temperature													
						6		Wire Bond Parameter Setting		According to Wire Bond Parameter table	Machine Display	Each machine	Is / hold or after conversion set up	Operator	Checklist (MPG Specs)	Call RM to re setting the Parameter													
						7		Conductor Cleanliness		No dirty and no remained foreign material	Naked eyes	Each machine	Every starting new lot / after conversion set up	Operator	Checklist (MPG Specs)	Clean Conductor													
						8		Capillary Unit number		800K	Machine Display	Each machine	Is / hold or after supplying changing	Operator	Checklist (MPG Specs)	Change Capillary													

Contoh Dokumen

2.FMEA (Failure Mode and Effect Analysis)

UTAC Indonesia														REVISION HISTORY						
FAILURE MODE AND EFFECT ANALYSIS														Initial Review	Final Review	Review Date	Review By			
FMEA Type: <input checked="" type="checkbox"/> Design <input checked="" type="checkbox"/> Process Process: <u>INDONESIA</u> Product: <u>INDONESIA</u> Date: <u>18 May 2018</u>														Revision: <u>01</u> Date: <u>18 May 2018</u>						
Process	Function	Requirement	Potential Failure Mode	Potential Effect(s) of Failure	B	C	Potential Cause(s) of Failure	Current process Control Prevention	D	Current Process Control Detection	D	RPN	Recommended Actions	Responsibility & Target of completion date	Action Taken	B	C	D	RPN	
INCOMING VISUAL INSPECTION	To ensure the incoming quality material before process / manufacture line	No damaged / defect on Last frame legs, Chip leads, No automatically readable of material incoming during inspection	Last frame started / inserted	Appearance defect	4	3	Improper handling of Last frame legs material handling	Follow WPI handling material	3	Visual eye	7	48								
			Chip Water Corrosion / Cracking	Appearance defect	4	3	Improper handling of chip	Follow WPI document	3	Visual using Microscope	7	48								
			Chip Corrosion	Performance	7	3	Improper handling of chip	Follow WPI handling material	3	Visual using Microscope	4	48								
			Chip material	Process automatically / Customer complaint	8	3	Over heat / misalign / mechanical	Follow WPI document	3	Visual using Microscope	7	30								
			Wiring	Performance	7	3	Over heat / wiring handling material	Follow WPI document	3	Visual eye	4	48								
ON BOARD	To ensure the incoming quality material before process / manufacture line	No damaged / defect on Last frame, No development of chip, material input and no water material problem during handling process	Final chip position	Performance / Normal operation of products	8	3	Wrong use of Solder Paste	Handle material safe	3	Visual eye	4	48								
							Final frame not in place	Final frame installation	3	Visual eye	4	48								
			Loss of Solder / Soldering	Die / Chip Lifting	8	3	Insufficient of Solder Paste	1. Operation start up check 2. Die guard of last	3	Visual inspection using microscope	7	48								
							Defect chip handling	1. Operation start up check / material handling	3	Visual inspection using microscope	7	48								
							Over exposure of testing temperature	1. Operation start up check 2. Rule for the testing temperature	3	Statistical data	4	48								
			Solder Paste on Die / overheat	Short circuit	7	3	Die pick up off-center during set up	Operation start up check	3	Visual inspection using microscope	7	48								
							Wrong material by used	1. Operation start up check 2. Rule for the material by used	3	Visual eye	4	48								
							Wrong glue dispensing pressure setting	1. Operation start up check 2. Rule for the dispensing pressure setting	3	Visual eye	4	48								
			Die exposure	Chip misalign up	7	3	Chip misalign up	Operation start up check	4	Pick up camera	4	48								
			Insufficient of Chip position	Performance / Underproduction	7	3	Wrong / Last frame installation / Tack material	1. Operation start up check 2. Design error mark in figure for tape orientation identification	4	Visual eye	4	48								
							Waste Die orientation handling mistake	1. Operation start up check 2. Put handling diagram direction on machine for marking	3	Visual eye	4	48								
			Wrong solder tape	Open / Short circuit and boarder fail	8	3	Wrong tape the handling	1. Operation start up check 2. The standard procedure for solder tape the last	3	Statistical	4	48								
							Wrong use of reference orientation die	Operation start up check	4	Visual eye	4	48								

