



IPC-CFX Mandatory and Optional Capabilities by Equipment Type — IPC-2591 V1.3

This document lists all of the mandatory and optional capabilities and associated IPC-CFX messages per capability for equipment to be listed on the IPC-CFX QPL. Read [IPC-2591](#) for explanations of these capabilities and messages.

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Legend

M – Required for all machines in class

MR – Required if equipped with a barcode/RFID reader

O – Optional capability

Blank – Not applicable to machine class

Category	Capability	Endpoint Class										
		Automated Labeler / Laser Marker	Stencil Printer	Solder Paste Inspection (SPI)	SMT Mounter (Pick and Place)	Automated Optical Inspection (AOI)	Solder Reflow Oven	Reflow Profiling	Selective Solder	Through-Hole Component Insertion (THT)	Test Equipment	Conformal Coating
CFX Core	Core Communications	M	M	M	M	M	M	M	M	M	M	M
Track and Trace	WIP Tracking	M	M	M	M	M	M	M	M	M	M	M
	WIP Identification	M	MR	MR	MR	MR	MR	MR	MR	MR	MR	MR
	Unit Initialization	M	O	O	O	O	O	O	O	O	O	O
	Panelized Unit Initialization	M	O	O	O	O	O	O	O	O	O	O
	Operator Tracking	O	O	O	O	O	O	O	O	O	O	O
	Equipment Data Tracking	O	O	O	O	O	O	O	O	O	O	O
	Unit Disqualification / Scrapping	O										
	Detailed Activity Tracking	O	O	O	O	O	O	O	O	O	O	O

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	Material Trace with Internal Setup	O	O		O		O	O	O	O	O	O
	Exact Material Trace with Internal Setup				MR					MR		
	Exact Material Trace with External Setup				M					M		
	Tool Trace	O	MR		O			O	O	O	O	O
Process Interlocking	Process Route Validation	O	O	O	O	O	O	O	O	O	O	O
	Unit Status Validation	O	O	O	O	O	O	O	O	O	O	O
	Unit Trace Validation	O	O	O	O	O	O	O	O	O	O	O
Recipes	Basic Recipe Visibility	M	M	M	M	M	M	M	M	M	M	M
	Remote Recipe Selection	O	O	O	O	O	O	O	O	O	O	O
	Remote Recipe Management	O	O	O	O	O	O	O	O	O	O	O
Setup Validation	Internal Setup Validation	O	O	O	O	O	O	O	O	O	O	O
	Offline Setup				O					O		
	External Setup Validation	O	O		O					O		
Blocking and Locking	Material Blocking for External Setup	O	O		O					O		
	Material Blocking for Internal Setup	O	O		O					O		
	Station Locking	O	O	O	O	O	O	O	O	O	O	O

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Personalization	Unit Personalization				O					O	O	
Station Information	Station Performance Reporting	M	M	M	M	M	M	M	M	M	M	M
	Advanced Performance Reporting	O	O	O	O	O	O	O	O	O	O	O
	Station Configuration Management	O	O	O	O	O	O	O	O	O	O	O
	Station Maintenance Tracking	O	O	O	O	O	O	O	O	O	O	O
	Energy Consumption Tracking	O	O	O	O	O	O	O	O	O	O	O
Test and Inspection	Production Unit Inspection			M		M						
	Automated Optical Inspection (AOI)					M						
	AOI Component Offset Measurement					O						
	Solder Paste Inspection			M								
	Production Unit Test										M	
Specialized Processing	Solder Paste Reflow Processing						M					
	Solder Paste Reflow Profiling							M				



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	Selective Solder Processing								M			
	Solder Paste Printing		M									
	Conformal Coating											M



Required IPC-CFX Messages by Capability — IPC-2591 V1.3

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Capability	Topic(s) and IPC-2591 Section Reference	Relevant Messages
Core Communications	CFX Root Level Message See 7.1	AreYouThereRequest / Response
		EndpointConnected
		EndpointShuttingDown
		GetEndpointInformationRequest / Response
		WhoIsThereRequest / Response
WIP Tracking	CFX.Production See 7.5	UnitsArrived
		WorkStarted
		WorkStageStarted
		WorkStageCompleted
		WorkStagePaused
		WorkStageResumed
		WorkCompleted
		UnitsDeparted



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WIP Identification	CFX.Production See 7.5	WorkStarted OR WorkCompleted
Unit Initialization	CFX.Production See 7.5	UnitsInitialized
Panelized Unit Initialization	CFX.Production See 7.5	UnitsInitialized
Operator Tracking	CFX.Production See 7.5	OperatorActivated
		OperatorDeactivated
Equipment Data Tracking	CFX.Production See 7.5	ReadingsRecorded
Unit Disqualification / Scrapping	CFX.Production See 7.5	UnitsDisqualified
Detailed Activity Tracking	CFX.Production See 7.5	ActivitiesExecuted
Material Trace with Internal Setup	CFX.Production.Assembly See 7.5.2	MaterialsInstalled
	CFX.Production.Application See 7.5.1	MaterialsApplied
Exact Material Trace with Internal Setup	CFX.Production.Assembly See 7.5.2	MaterialsInstalled
Exact Material Trace with External Setup	CFX.Production.Assembly See 7.5.2	MaterialsInstalled



Required IPC-CFX Messages by Capability — IPC-2591 V1.3

Tool Trace	CFX.Production See 7.5	ToolsUsed
Process Route Validation	CFX.InformationSystem.UnitValidation See 7.2.2	ValidateUnitsRequest
Unit Status Validation	CFX.InformationSystem.UnitValidation See 7.2.2	ValidateUnitsRequest
Unit Trace Validation	CFX.InformationSystem.UnitValidation See 7.2.2	ValidateUnitsRequest
Basic Recipe Visibility	CFX.Production See 7.5	RecipeActivated
		RecipeModified
		GetActiveRecipeRequest
Remote Recipe Selection	CFX.Production See 7.5	ActivateRecipeRequest / Response
Remote Recipe Management	CFX.Production See 7.5	UpdateRecipeRequest / Response
		GetRecipeRequest / Response
Internal Setup Validation	CFX.Materials.Storage See 7.4.2	GetLoadedMaterialsRequest / Response
		MaterialsLoaded
		MaterialsUnloaded
		ValidateStationSetupRequest / Response
Offline Setup		MaterialCarriersLoaded

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	CFX.Materials.Storage See 7.4.2	MaterialCarriersUnloaded
External Setup Validation	CFX.Production See 7.5	GetRequiredSetupRequest / Response
		SetupRequirementsChanged
		LockStationRequest / Response
		UnlockStationRequest / Response
Material Blocking for External Setup Validation	CFX.Production See 7.5	BlockMaterialLocationsRequest / Response
		UnblockMaterialLocationsRequest / Response
Material Blocking for Internal Setup Validation	CFX.Materials See 7.4	BlockMaterialsRequest / Response
		UnblockMaterialsRequest / Response
Station Locking	CFX.Production See 7.5	LockStationRequest / Response
		UnlockStationRequest / Response
Unit Personalization	CFX.Production.Assembly See 7.5.2	UnitsPersonalized
Station Performance Reporting	CFX.ResourcePerformance See 7.6	FaultOccurred
		FaultAcknowledged
		FaultCleared
		HandleFaultRequest / Response



Required IPC-CFX Messages by Capability — IPC-2591 V1.3

		GetActiveFaultsRequest / Response
		LogEntryRecorded
		StationOffline
		StationOnline
		StationStateChanged
Advanced Station Performance Reporting	CFX.ResourcePerformance See 7.6	CalibrationPerformed
		StageStateChanged
		ToolChanged
Station Configuration Management	CFX.ResourcePerformance See 7.6	StationParametersModified
		ModifyStationParametersRequest / Response
Station Maintenance Tracking	CFX.ResourcePerformance See 7.6	MaintenancePerformed
Energy Consumption Tracking	CFX.ResourcePerformance See 7.6	EnergyConsumed
Production Unit Inspection	CFX.Production.TestAndInspection See 7.5.6	UnitsInspected
Automated Optical Inspection (AOI)	CFX.Production.TestAndInspection See 7.5.6	UnitsInspected



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AOI Component Offset Measurement	CFX.Production.TestAndInspection See 7.5.6	UnitsInspected
Solder Paste Inspection	CFX.Production.TestAndInspection See 7.5.6	UnitsInspected
Production Unit Test	CFX.Production.TestAndInspection See 7.5.6	UnitsTested
Solder Paste Reflow Processing	CFX.Production See 7.5	UnitsProcessed
Solder Paste Reflow Profiling	CFX.Production See 7.5	UnitsProcessed
Selective Solder Processing	CFX.Production See 7.5	UnitsProcessed
Solder Paste Printing	CFX.ResourcePerformance.Solder PastePrinting See 7.6.3	StencilCleaned
Conformal Coating	CFX.Production See 7.5	UnitsProcessed