Color codes:

Content mapped into Alarm/TCA parameters carried by Notification/Streaming mechanisms.	Content NOT mapped into Alarm/TCA parameters but useful for documentation and/or formal specification	Content which requires further analysis

Differences wrt version 1.0.0

Sanitized all hyphens with underscores in:
- Probable Cause / Alarm Condition Name: OMS SSF-O and SSF-P --> SSF_O, SSF_P
- Additional Info: DSR-LOM, DSR-CSF --> DSR_LOM, DSR_CSF

Specified the Alarm and TCA Qualifiers
Introduced the fields with
- *concatenated* LayerProtocolQualifier_Alarm Qualifier_Alarm Condition Name
- *concatenated* LayerProtocolQualifier_TCAQualifier_ThresholdIndicatorName

There are two options, either specify B and C columns or only D column
The LPQ (Layer Protocol Qualifier) is systematically present ony in the D column option
"CONTRA" means "CONTRADIRECTIONAL", while "CODIRECTIONAL" is the default and is not coded with additional string.

Differences wrt version 2.0.0

TAPI Standard TCAs, enhanced the optical power metrics.

Notes:

An *alarm instance* (or better a detector of a specific condition) is unambiguosly identified by:
1) Alarm Name
2) target-object-identifier (global class) plus target-object-name (local class)
   - Note that target-object-type is associated to unique UUID
3) Alarm qualifier

Examples of Alarm qualifiers:

For Connectivity Alarm Category in case same CEP instance may include monitoring at both ODU and OTU layers.
For Connectivity Alarm Category in case same CEP instance may include MIP parameters related to both co-directional and contra-directional monitoring.
For Equipment and Processing Alarm Category, e.g. the local id of the ActualNonFieldReplaceableModule which identifies more precisely/uniquely/unambiguously the alarm source.
For Environment Alarm Category, e.g. on the same Device instance may appear more Environmental alarm notifications with same Alarn Name.

A TCA instance (or better a detector of the specific condition) is unambigously identified by:
1) PM Pararameter Name
2) target-object-identifier (global class) plus target-object-name (local class)
   - Note that target-object-type is associated to unique UUID
3) Referenced OAM Job instance
4) TCA Qualifier
5) Granularity Period, only in case there is no OAM job related to the TCA detection

OTUk layers supported in 2.4
OTU2E not supported by ITU-T

The severity column specifies the alarm severity as defined by the default ASAP (Alarm Severity Assignment Profile) object (not yet explicitly modeled by TAPI)

TAPI 2.4 merges Alarm and TCA data types, which augments both Notification and Streaming objects.

This version of the spreadsheet does not include the following G.874 specified atomic functions:
- OTUkV/ODUk_A_Sk
- FlexO_TT_Sk
- FlexO-x_TT_Sk
- FlexO-x_CTT_Sk

Editors:	
Ronald Zabaleta	Telefónica
Andrea Mazzini	Nokia
Arturo Mayoral López de Lerma	Telecom Infra Project
Ramon Casellas	CTTC
Nigel Davis	Ciena
Pedro Amaral	Infinera

Index	Probable Cause / Alarm Condition Name	Alarm Qualifier	Probable Cause / Alarm Condition Name & LPQ & Alarm Qualifier [empty: equal to Alarm Condition Name]	Description (text, in yang comment, not a data node)	Alarm Category	Target Object Type	Layer Protocol Name	Layer Protocol Qualifier	Perceived Severity	ITU-T G.798, G.874 ITU-T 7041 - Generic framing procedure ITU-T G.806 - Characteristics of transport equipment – Description methodology and generic functionality	Other Notes
1	NATIVE				All	All	All	All	All		When there is no standard alarm name corresponding to the native alarm name
2	AIRCOND			Air conditioning failure	Enviroment	Device	na	na	Critical		
3	AIRDRYR			Air dryer failure	Enviroment	Device	na	na	Critical		
4	BATTERY			Battery failure	Enviroment	Device	na	na	Critical		
5	CLFAN			Cooling fan failure	Enviroment	Device	na	na	Critical		
6	FIRE			Fire	Enviroment	Device	na	na	Critical		
7	HIHUM			High humidity	Enviroment	Device	na	na	Critical		
8	HITEMP			High temperature	Enviroment	Device	na	na	Critical		
9	INTRUSION			Intrusion	Enviroment	Device	na	na	Critical		
10	EQPT_TEMP_HI			High temperature	Equipment	Device	na	na	Minor		
11	EQPT_TEMP_LOW			Low temperature	Equipment	Device	na	na	Minor		
12	OPENDR			Open door	Enviroment	Device	na	na	Critical		
13	SHELF_ID_CONFLICT			Shelf ID conflict	Equipment	Device	na	na	Critical		
14	SHELF_ID_MISMATCH			Shelf ID mismatch	Equipment	Device	na	na	Major		
15	LOWBAT			Low battery voltage	Enviroment	Device	na	na	Critical		
16	POWER_OUTAGE			Commercial power failure	Enviroment	Device	na	na	Critical		
17	CFG_DATASAVE_FAIL			Failure to save configuration data	Processing	Device/Equipment	na	na	Major		
18	COMMIT_FAIL			Commit failure	Processing	Device/Equipment	na	na	Minor		
19	COMMIT_TIMEOUT			Software not committed	Processing	Device/Equipment	na	na	Critical		
20	DB_ERR			Database error	Processing	Device/Equipment	na	na	Major		
21	DB_RESTORE_FAIL			Database restoration failed	Processing	Device/Equipment	na	na	Major		
22	DBMS_DELETE			The NE database is deleted	Processing	Device/Equipment	na	na	Critical		
23	DB_SYNC_FAIL			Database synchronization failed	Processing	Device/Equipment	na	na	Minor		
24	LCS_EXPIRED			License expired	Processing	Device/Equipment	na	na	Critical		
25	LCS_LOST			License is lost or uninstalled	Processing	Device/Equipment	na	na	Critical		
26	NTP_SYNC_FAIL			NTP synchronization failure	Processing	Device/Equipment	na	na	Minor		
27	SERVCAP_EXCEED			Service Capacity Exceed License	Processing	Device/Equipment	na	na	Major		
28	SHELF_TYPE_MISMATCH			Shelf type mismatch	Processing	Device/Equipment	na	na	Critical		
29	SWDL_BD_NOT_MATCH			Board software mismatched	Processing	Device/Equipment	na	na	Minor		
30	COMM_FAIL			Internal communication failure	Equipment	Equipment	na	na	Major		
31	EQPT_MT			Equipment is in maintenance.	Equipment	Equipment	na	na	Not alarmed		
32	MOD_CC_HIGH			Module cooling current too high	Equipment	Equipment	na	na	Minor		
33	MOD_CC_LOW			Module cooling current too low	Equipment	Equipment	na	na	Minor		
34	MOD_TEMP_HIGH			Module working temperature too high	Equipment	Equipment	na	na	Minor		
35	MOD_TEMP_LOW			Module working temperature too low	Equipment	Equipment	na	na	Minor		
36	FAN_FAIL			FAN unit failed	Equipment	Equipment	na	na	Major		
37	PLUGM_RMV			Pluggable module offline or uninstalled	Equipment	Equipment	na	na	Major		
38	PSU_FAIL			Power supply unit failure	Equipment	Equipment	na	na	Major		
39	EQPT_MISMATCH			The equipment is not proper because the functional board is not supported.	Equipment	Holder	na	na	Major		
40	LPBKFACILITY			Loopback, facility	Equipment, Connectivity	CEP, NEP, ACCESS_PORT	any	any	Not alarmed		External / Line Loopback / LOOPBACK_FACILITY
41	LPBKTERM			Loopback, terminal	Equipment, Connectivity	CEP, NEP, ACCESS_PORT	any	any	Not alarmed		Internal / Device Loopback /LOOPBACK_TERMINAL
42	BDI	OSC OSC_CONTRA	OTS_OSC_BDI OTS_OSC_CONTRA_BDI	Backward Defect indication	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA	OTS_MEDIA	Not reported	G.798 - As the specific format of the OSC is outside the scope of G.709, no specific defects, except for dLOS-O, are defined in this Recommendation either.	

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43	DEG	OSC OSC_CONTRA	OTS_OSC_DEG OTS_OSC_CONTRA_DEG	Signal degrade	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA	OTS_MEDIA	Not reported	G.798 - As the specific format of the OSC is outside the scope of G.709, no specific defects, except for dLOS-O, are defined in this Recommendation either.	
44	RAI	OSC OSC_CONTRA	OTS_OSC_RAI OTS_OSC_CONTRA_RAI	Remote alarm indication	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA	OTS_MEDIA	Not reported	G.798 - As the specific format of the OSC is outside the scope of G.709, no specific defects, except for dLOS-O, are defined in this Recommendation either.	
45	LOS	OSC OSC_CONTRA	OTSiMC_OSC_LOS OTSiMC_OSC_CONTRA_LOS	Loss of input optical power on the OSC. This alarm is generated when the input optical power of the OSC board exceeds the LOS threshold.	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA	OTSiMC (2.1.3 also OCH)	Critical	**LOS-O** OTSi to OSC adaptation sink function (OTSi/OSC_A_Sk) cLOS-O <- dLOS-O **The OTSi is the optical carrier supporting the OSC function.**	
46	GAIN_LOW	CONTRA [Only for 2.1.3: OTS OMS OTS_CONTRA OMS_CONTRA]	OTS_GAIN_LOW OMS_GAIN_LOW OTS_CONTRA_GAIN_LOW OMS_CONTRA_GAIN_LOW	OA gain insufficient	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA	OTS_MEDIA, OMS	Critical		Mapped to an OTS transmission function Physical Route information shall increase alarm precision Alarm Qualifier may include Band (e.g. C/L) and other possible necessary qualifier due to internal structure of ROADM/ILA equipment. For further development.
47	GAIN_HIGH	CONTRA [Only for 2.1.3: OTS OMS OTS_CONTRA OMS_CONTRA]	OTS_GAIN_HIGH OMS_GAIN_HIGH OTS_CONTRA_GAIN_HIGH OMS_CONTRA_GAIN_HIGH	OA gain is higher than standard level	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA	OTS_MEDIA, OMS	Critical		Mapped to an OTS transmission function Physical Route information shall increase alarm precision Alarm Qualifier may include Band (e.g. C/L) and other possible necessary qualifier due to internal structure of ROADM/ILA equipment. For further development.
48	IN_PWR_HIGH	CONTRA [Only for 2.1.3: OMS OMS_CONTRA]	IN_PWR_HIGH CONTRA_IN_PWR_HIGH OMS_IN_PWR_HIGH OMS_CONTRA_IN_PWR_HIGH Note: OTS, DSR, ETH layers not explicit in this case	Input optical power too high. The alarm arises when the input optical power is higher than the upper limit (saturation) of the optical receiver.	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA, DIGITAL_OTN, DSR, ETH	OTS_MEDIA, OMS, DSR qualifiers, ETH	Minor		OTS/OMS model, this alarm applies to the physical aspect, which is common to e.g. C/L/S Bands. The Photonic CEP may have distinct instances per Band. This alarm can be raised by CEP which "main" layer rate is DSR/ETH but the alarm is referring to the not modeled encapsulated optical transmission functions.
49	IN_PWR_LOW	CONTRA [Only for 2.1.3: OMS OMS_CONTRA]	IN_PWR_LOW CONTRA_IN_PWR_LOW OMS_IN_PWR_LOW OMS_CONTRA_IN_PWR_LOW Note: OTS, DSR, ETH layers not explicit in this case	Input optical power too low. The alarm arises when the input optical power is below the lower limit (sensitivity) of the optical receiver.	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA, DIGITAL_OTN, DSR, ETH	OTS_MEDIA, OMS, DSR qualifiers, ETH	Minor		OTS/OMS model, this alarm applies to the physical aspect, which is common to e.g. C/L/S Bands. The Photonic CEP may have distinct instances per Band. This alarm can be raised by CEP which "main" layer rate is DSR/ETH but the alarm is referring to the not modeled encapsulated optical transmission functions.
50	OUT_PWR_HIGH	CONTRA [Only for 2.1.3: OMS OMS_CONTRA]	OUT_PWR_HIGH CONTRA_OUT_PWR_HIGH OMS_OUT_PWR_HIGH OMS_CONTRA_OUT_PWR_HIGH Note: OTS, DSR, ETH layers not explicit in this case	Output optical power too high. This alarm occurs when the laser output optical power crosses or reaches its upper working limit.	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA, DIGITAL_OTN, DSR, ETH	OTS_MEDIA, OMS, DSR qualifiers, ETH	Major		OTS/OMS model, this alarm applies to the physical aspect, which is common to e.g. C/L/S Bands. The Photonic CEP may have distinct instances per Band. This alarm can be raised by CEP which "main" layer rate is DSR/ETH but the alarm is referring to the not modeled encapsulated optical transmission functions.
51	OUT_PWR_LOW	CONTRA [Only for 2.1.3: OMS OMS_CONTRA]	OUT_PWR_LOW CONTRA_OUT_PWR_LOW OMS_OUT_PWR_LOW OMS_CONTRA_OUT_PWR_LOW Note: OTS, DSR, ETH layers not explicit in this case	Output optical power too low. The laser output optical power is too low.	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA, DIGITAL_OTN, DSR, ETH	OTS_MEDIA, OMS, DSR qualifiers, ETH	Major		OTS/OMS model, this alarm applies to the physical aspect, which is common to e.g. C/L/S Bands. The Photonic CEP may have distinct instances per Band. This alarm can be raised by CEP which "main" layer rate is DSR/ETH but the alarm is referring to the not modeled encapsulated optical transmission functions.
52	LASER_SHUT_DOWN			The laser of the board is shut down maybe better definition is "the signal transmission (implying laser on) is down"	Connectivity	CEP	PHOTONIC_MEDIA, DIGITAL_OTN, DSR, ETH	OTS_MEDIA, DSR qualifiers, ETH	Major		Photonic_Media CEP but in general to any CEP where photonic is encapsulated. Not only OCH and OTSi, but also DSR/ETH layer protocol qualifiers (laser shutdown on client/UNI ports). Note that seems not applicable to MEP/MIP.
53	BDI_P	CONTRA [Only for 2.1.3: OTS OTS_CONTRA]	OTS_BDI_P OTS_CONTRA_BDI_P	OTS Backward defect indication (payload). This alarm is generated when the local site receives the OTS_BDI_P signal inserted back by the downstream site.	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA	OTS_MEDIA (2.1.3 OTS, OTS_OMS)	Not reported	**BDI-P** cBDI-P <- dBDI-P and (not CI_SSF) and (not (dTIM and (not TIMActDis))) and (not dBDI-O) OTS-O trail termination sink function (OTS-O_TT_Sk)	
54	BDI_P	CONTRA [Only for 2.1.3: OMS OMS_CONTRA]	OMS_BDI_P OMS_CONTRA_BDI_P	OMS backward defect indication (payload)	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA	OMS (2.1.3 OMS, OTS_OMS)	Not reported	**BDI-P** cBDI-P <- (dBDI-P and (not dFDI-O)) and (not cBDI) OMS-O trail termination sink function (OMS-O_TT_Sk)	
55	BDI_P	OTSi OTSi_CONTRA	OTSi_BDI_P CONTRA_OTSi_BDI_P	OTSi backward defect indication (payload)	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA	OTSiMC (2.1.3 also OCH)	Not reported	**BDI-P** cBDI-P <- dBDI-P and (not CI_SSF) and (not (dTIM and (not TIMActDis))) and (not dBDI-O) OTSiG-O trail termination sink function (OTSiG-O_TT_Sk)	

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56	BDI_O	CONTRA [Only for 2.1.3: OTS OTS_CONTRA]	OTS_BDI_O OTS_CONTRA_BDI_O	OTS Backward defect indication (overhead). This alarm is generated when the local site receives the OTS_BDI_O signal inserted by the upstream site.	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA	OTS_MEDIA (2.1.3 OTS, OTS_OMS)	Not reported	**BDI-O** cBDI-O <- dBDI-O and (not CI_SSF) and (not (dTIM and (not TIMActDis))) and (not dBDI-P) OTS-O trail termination sink function (OTS-O_TT_Sk)	
57	BDI_O	CONTRA [Only for 2.1.3: OMS OMS_CONTRA]	OMS_BDI_O OMS_CONTRA_BDI_O	OMS backward defect indication (overhead)	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA	OMS (2.1.3 OMS, OTS_OMS)	Not reported	**BDI-O** cBDI-O <- (dBDI-O and (not dFDI-O)) and (not cBDI) OMS-O trail termination sink function (OMS-O_TT_Sk)	
58	BDI_O	CONTRA	OTSi_BDI_O OTSi_CONTRA_BDI_O	OTSi backward defect indication (overhead)	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA	OTSiMC (2.1.3 also OCH)	Not reported	**BDI-O** cBDI-O <- dBDI-O and (not CI_SSF) and (not (dTIM and (not TIMActDis))) and (not dBDI-P) OTSiG-O trail termination sink function (OTSiG-O_TT_Sk)	
59	BDI	CONTRA [Only for 2.1.3: OTS OTS_CONTRA]	OTS_BDI OTS_CONTRA_BDI	OTS backward defect indication. This alarm is generated to suppress the OTS_BDI_P and OTS_BDI_O alarms when the two alarms coexist.	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA	OTS_MEDIA (2.1.3 OTS, OTS_OMS)	Not reported	**BDI** cBDI <- dBDI-P and dBDI-O and (not CI_SSF) and (not dTIM) OTS-O trail termination sink function (OTS-O_TT_Sk)	
60	BDI	CONTRA [Only for 2.1.3: OMS OMS_CONTRA]	OMS_BDI OMS_CONTRA_BDI	OMS backward defect indication	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA	OMS (2.1.3 OMS, OTS_OMS)	Not reported	**BDI** cBDI <- (dBDI-P and (not dFDI-O)) and (dBDI-O and (not dFDI-O)) OMS-O trail termination sink function (OMS-O_TT_Sk)	
61	BDI	CONTRA	OTSi_BDI OTSi_CONTRA_BDI	OTSi backward defect indication	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA	OTSiMC (2.1.3 also OCH)	Not reported	**BDI** cBDI <- dBDI-P and dBDI-O and (not CI_SSF) and (not dTIM) OTSiG-O trail termination sink function (OTSiG-O_TT_Sk)	
62	LOS	CONTRA	OS_LOS OS_CONTRA_LOS		Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA	OS_MEDIA	Critical	**LOS** OSx trail termination sink function (OSx_TT_Sk) (x = 2G5, 10G, 40G, FC-y) Note: The OSx layer function is not part of the OTN.	
63	LOS	CONTRA [Only for 2.1.3: OTS OTS_CONTRA]	OTS_LOS OTS_CONTRA_LOS	OTS loss of signal. When the OTS_LOS_P and OTS_LOS_O alarms coexist, this alarm is generated.	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA	OTS_MEDIA (2.1.3 OTS, OTS_OMS)	Critical	**ITU-T: Not defined**	
64	LOS_P	CONTRA [Only for 2.1.3: OTS OTS_CONTRA]	OTS_LOS_P OTS_CONTRA_LOS_P	OTS loss of signal - Payload. This alarm is generated when there is no Optical Signal coming from the out port of the OA.	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA	OTS_MEDIA (2.1.3 OTS, OTS_OMS)	Critical	**LOS-P** cLOS-P <- dLOS-P and (not dPMI) and (not CI_SSF) OTS-O trail termination sink function (OTS-O_TT_Sk)	
65	LOS_P	CONTRA [Only for 2.1.3: OMS OMS_CONTRA]	OMS_LOS_P OMS_CONTRA_LOS_P	OMS loss of signal - Payload. This alarm is generated when the OTU board detects the LOS alarm but there is no OTS_LOS_P alarm at the OTS layer.	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA	OMS (2.1.3 OMS, OTS_OMS)	Critical	**LOS-P** cLOS-P <- dLOS-P and (not dPMI) and (not CI_SSF) OMS-O trail termination sink function (OMS-O_TT_Sk)	
66	LOS_O	CONTRA [Only for 2.1.3: OTS OTS_CONTRA]	OTS_LOS_O OTS_CONTRA_LOS_O	OTS loss of signal - Overhead. This alarm is generated when the OS detects LOS signal.	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA	OTS_MEDIA (2.1.3 OTS, OTS_OMS)	Major	**ITU-T: Not defined**	

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67	SSF	CONTRA [Only for 2.1.3: OMS OMS_CONTRA]	OMS_SSF OMS_CONTRA_SSF Note: also known as FDI	OMS forward defect indication	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA	OMS (2.1.3 OMS, OTS_OMS)	Not reported	**SSF** cSSF <- (CI_SSF-P or dFDI-P) and (CI_SSF-O or dFDI-O) OMS-O trail termination sink function (OMS-O_TT_Sk)	
68	SSF_O	CONTRA [Only for 2.1.3: OMS OMS_CONTRA]	OMS_SSF_O OMS_CONTRA_SSF_O Note: also known as FDI_O	OMS forward defect indication - overhead	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA	OMS (2.1.3 OMS, OTS_OMS)	Not reported	**SSF-O** cSSF-O <- (CI_SSF-O or dFDI-O) and (not cSSF) OMS-O trail termination sink function (OMS-O_TT_Sk)	
69	SSF_P	CONTRA [Only for 2.1.3: OMS OMS_CONTRA]	OMS_SSF_P OMS_CONTRA_SSF_P Note: also known as FDI_P	OMS forward defect indication - payload	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA	OMS (2.1.3 OMS, OTS_OMS)	Not reported	**SSF-P** cSSF-P <- (CI_SSF-P or dFDI-P) and (not cSSF) OMS-O trail termination sink function (OMS-O_TT_Sk)	
70	PMI	CONTRA [Only for 2.1.3: OTS OTS_CONTRA]	OTS_PMI OTS_CONTRA_PMI	OTS-layer payload loss alarm	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA	OTS_MEDIA (2.1.3 OTS, OTS_OMS)	Not reported	**G.798 - Payload missing indication defect (dPMI)** **The defect PMI will not result in a fault cause.** It is used to suppress LOS-P defects-related consequent actions, defect correlations and performance monitoring data at the OTS-O and OMS-O trail termination sink in case of an already missing payload at the trail termination source. **OTS**: cLOS-P <- dLOS-P and (not dPMI) and (not CI_SSF)	
71	PMI	CONTRA [Only for 2.1.3: OMS OMS_CONTRA]	OMS_PMI OMS_CONTRA_PMI	OMS-layer payload loss alarm	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA	OMS (2.1.3 OMS, OTS_OMS)	Not reported	**G.798 - Payload missing indication defect (dPMI)** **The defect PMI will not result in a fault cause.** It is used to suppress LOS-P defects-related consequent actions, defect correlations and performance monitoring data at the OTS-O and OMS-O trail termination sink in case of an already missing payload at the trail termination source. **OMS**: cLOS-P <- dLOS-P and (not dPMI) and (not dFDI-P) and (not CI_SSF-P)	
72	TIM	CONTRA [Only for 2.1.3: OTS OTS_CONTRA]	OTS_TIM OTS_CONTRA_TIM	OTS trace identifier mismatch	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA	OTS_MEDIA (2.1.3 OTS, OTS_OMS)	Minor	**TIM** cTIM <- dTIM and (not CI_SSF) OTS-O trail termination sink function (OTS-O_TT_Sk)	
73	TIM	CONTRA	OTSi_TIM OTSi_CONTRA_TIM	OTSiG trace identifier mismatch	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA	OTSiMC (2.1.3 also OCH)	Minor	**TIM** cTIM <- dTIM and (not CI_SSF) OTSiG-O trail termination sink function (OTSiG-O_TT_Sk)	
74	LOS_P	OTSi	OTSi_LOS_P	OCH/OTSi loss of signal - Payload. Detected by OTU adaptation.	Connectivity	CEP/MEP	DIGITAL_OTN or PHOTONIC_MEDIA to inform of implicitly encapsulated layers?	OTU1, OTU2, OTU3, OTU4, OTU_CN FlexO for further study or OTSiMC to inform of implicitly encapsulated layers? (2.1.3 OCH, OTSi)	Critical	**LOS-P** G.798 OCH-O does not foresee LOS-P Note that G.798 defines only OCH-O, payload is only OTSi. Loss of signal payload defect (dLOS-P) cLOS-P <- dLOS-P and (not AI_TSF-P) cLOS <- ∑dLOS-P[i] (for OTSiG and FlexO) The purpose of monitoring this parameter is to indicate either: i) OTSi transmitter failure; or ii) OTSi optical path break (this could be a result of misconfigured or broken media elements in the optical path). OTSi to OTUk adaptation sink function (OTSi/OTUk_A_Sk) OTSi to OTUkV adaptation sink function (OTSi/OTUkV_A_Sk) OTSi to OTUk-RS adaptation sink function (OTSi/OTUk-RS_A_Sk; k=25u,25,50u,50) OTSi to OTUk adaptation sink function (OTSiG/OTUk_A_Sk) OTSiG to OTUkV adaptation sink function (OTSiG/OTUkV_A_Sk) OTSi to OTUCn adaptation sink function (OTSi/OTUCn_A_Sk) OTSiG to OTUCn adaptation sink function (OTSiG/OTUCn_A_Sk) OTSi to FlexO-1-SC adaptation sink function (OTSi/FlexO-1-SC_A_Sk) OTSiG to FlexO adaptation sink function (OTSiG/FlexO_A_Sk)	
75	LOS	OTSi	OTSi_LOS	OCH/OTSi Loss of signal This alarm likely applies when the hw does not support the correlation (i.e. SSF) with server layer alarms.	Connectivity	CEP/MEP	DIGITAL_OTN or PHOTONIC_MEDIA to inform of implicitly encapsulated layers?	OTU1, OTU2, OTU3, OTU4, OTU_CN or OTSiMC to inform of implicitly encapsulated layers? (2.1.3 OCH, OTSi)	Critical	**ITU-T: Not defined**	
76	SSF	CONTRA	OTSi_SSF OTSi_CONTRA_SSF Note: also known as FDI	OCH/OTSi forward defect indication. This alarm is generated to suppress the OCH_FDI_P and OCH_FDI_O alarms when the two alarms coexist.	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA	OTSiMC (2.1.3 also OCH)	Not reported	**SSF** cSSF <- (CI_SSF-P or dFDI-P) and (CI_SSF-O or dFDI-O) OTSiG-O trail termination sink function (OTSiG-O_TT_Sk) OCh-O trail termination sink function (OCh-O_TT_Sk)	
77	SSF_O	CONTRA	OTSi_SSF_O OTSi_CONTRA_SSF_O Note: also known as FDI_O	OCH/OTSi forward defect indication - Overhead This alarm is generated when the downstream station receives the OCH_FDI_O signal inserted by the OTS layer after the OTS layer detects the OTS_LOS_O signal.	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA	OTSiMC (2.1.3 also OCH)	Not reported	**SSF-O** cSSF-O <- (CI_SSF-O or dFDI-O) and (not cSSF) OTSiG-O trail termination sink function (OTSiG-O_TT_Sk) OCh-O trail termination sink function (OCh-O_TT_Sk)	

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78	SSF_P	CONTRA	OTSi_SSF_P OTSi_CONTRA_SSF_P Note: also known as FDI_P	OCH/OTSi forward defect indication - Payload. This alarm is generated when the downstream station receives the OCH_FDI_P signal inserted by the OMS layer after the OMS layer detects a payload LOS signal.	Connectivity	CEP+(MIP codir)/CEP+(MEP)/MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA	OTSiMC (2.1.3 also OCH)	Not reported	**SSF-P** cSSF-P <- (CI_SSF-P or dFDI-P) and (not cSSF) OTSiG-O trail termination sink function (OTSiG-O_TT_Sk) OCh-O trail termination sink function (OCh-O_TT_Sk)	
79	OCI	CONTRA	OTSi_OCI OTSi_CONTRA_OCI	OCH/OTSi open connection indication. This alarm is generated when the optical termination node in the downstream receives the OCI signal inserted to the downstream if no optical cross-connections are configured on the upstream service link or no logical fiber connection is configured from the OTU board to the multiplexer board.	Connectivity	CEP+(MIP codir)/CEP+(MEP)/MEP/MIP codir CEP+(MIP contradir)/MIP contradir	PHOTONIC_MEDIA	OTSiMC (2.1.3 also OCH)	Major	**OCI** cOCI <- dOCI and (not CI_SSF-P) and (not CI_SSF-O) and (not FDI-O) and (not FDI P) OTSiG-O trail termination sink function (OTSiG-O_TT_Sk) OCh-O trail termination sink function (OCh-O_TT_Sk)	
80	BEFFEC_EXC		OTU_BEFFEC_EXC	Excessive error defect before FEC	Connectivity	CEP+(MIP codir)/CEP+(MEP)/MEP/MIP codir CEP+(MIP contradir)/MIP contradir	DIGITAL_OTN	OTU1, OTU2, OTU3, OTU4, OTU_CN (2.1.3 OCH, OTSi)	Major	**This is Pre-FEC BER Monitoring, not defined by ITU-T** **The G.874 functions supporting pFECcorrErr are listed in the TCA sheet.**	pre-fec-ber "counter: bit error rate before correction by FEC" post-fec-ber "counter: bit error rate after correction by FEC" corrected-bytes "Bytes corrected between those that were received corrupted" corrected-bits "Bits corrected between those that were received corrupted" uncorrectable-bytes "Bytes that could not be corrected by FEC" uncorrectable-bits "Bits that could not be corrected by FEC"
81	LFA	For further definition	DSR_LFA? For further definition	Loss of FEC word Alignment	Connectivity	CEP+(MIP codir)/CEP+(MEP)/MEP/MIP codir CEP+(MIP contradir)/MIP contradir	DSR	For further definition	Major	**LFA** OSx to CBRx adaptation sink function for 64B/66B encoded clients with optional FEC (OSx/CBRx-b_A_Sk) (x = FC-y) OSx to CBRx adaptation sink function for 64B/66B encoded clients with mandatory FEC (OSx/CBRx-c_A_Sk) (x = FC-y)	**OSx/CBRx-b_A_Sk** cLFA <- dLFA and FECEn and (not AI_TSF) **OSx/CBRx-c_A_Sk** cLFA <- dLFA and (not AI_TSF)
82	SSF	[Only for 2.1.3: OTU]	OTU_SSF Note: also known as AIS	OTUk alarm indication signal	Connectivity	CEP/MEP	DIGITAL_OTN	OTU1, OTU2, OTU3, OTU4, OTU_CN (2.1.3 OCH, OTSi)	Not reported	**SSF** cSSF <- CI_SSF or dAIS OTU trail termination sink function (OTU_TT_Sk) OTUkV trail termination sink function (OTUkV_TT_Sk)	
83	SSF	CONTRA	ODU_SSF ODU_CONTRA_SSF Note: also known as AIS	ODUkP alarm indication signal	Connectivity	CEP+(MIP codir)/CEP+(MEP)/MEP/MIP codir CEP+(MIP contradir)/MIP contradir	DIGITAL_OTN	ODU_FLEX, ODU0, ODU1, ODU2, ODU2E, ODU3, ODU4, ODU_CN	Not reported	**SSF** cSSF <- CI_SSF or dAIS ODUP trail termination sink function (ODUP_TT_Sk)	
84	SSF	CONTRA not strictly necessary but maybe preferable	ODU_TCM_SSF Note: also known as AIS	ODUkT alarm indication signal	Connectivity	TCM-MEP/TCM-MIP	DIGITAL_OTN	ODU_FLEX, ODU0, ODU1, ODU2, ODU2E, ODU3, ODU4, ODU_CN	Not reported	**SSF** cSSF <- CI_SSF or dAIS ODUT trail termination sink function (ODUT_TT_Sk) ODUT non-intrusive monitoring function (ODUTm_TT_Sk)	Note that TCM-MEP and TCM-MIP instances include codir/contradir info
85	BDI	[Only for 2.1.3: OTU]	OTU_BDI	OTUk backward defect indication	Connectivity	CEP/MEP	DIGITAL_OTN	OTU1, OTU2, OTU3, OTU4, OTU_CN (2.1.3 OCH, OTSi)	Not reported	**BDI** cBDI <- dBDI and (not CI_SSF) and (not dAIS) and (not (dTIM and (not TIMActDis))) OTU trail termination sink function (OTU_TT_Sk) OTUkV trail termination sink function (OTUkV_TT_Sk)	
86	BDI	CONTRA	ODU_BDI ODU_CONTRA_BDI	ODUkP backward defect indication	Connectivity	CEP+(MIP codir)/CEP+(MEP)/MEP/MIP codir CEP+(MIP contradir)/MIP contradir	DIGITAL_OTN	ODU_FLEX, ODU0, ODU1, ODU2, ODU2E, ODU3, ODU4, ODU_CN	Not reported	**BDI** cBDI <- dBDI and (not CI_SSF) and (not dAIS) and (not dOCI) and (not dLCK) and (not (dTIM and (not TIMActDis))) ODUP trail termination sink function (ODUP_TT_Sk)	
87	BDI	CONTRA not strictly necessary but maybe preferable	ODU_TCM_BDI	ODUkT backward defect indication	Connectivity	TCM-MEP/TCM-MIP	DIGITAL_OTN	ODU_FLEX, ODU0, ODU1, ODU2, ODU2E, ODU3, ODU4, ODU_CN	Not reported	**BDI** cBDI <- dBDI and (not CI_SSF) and (not dAIS) and (not dOCI) and (not dLCK) and (not (dTIM and (not TIMActDis))) ODUT trail termination sink function (ODUT_TT_Sk) ODUT non-intrusive monitoring function (ODUTm_TT_Sk)	Note that TCM-MEP and TCM-MIP instances include codir/contradir info
88	LCK	CONTRA	ODU_LCK ODU_CONTRA_LCK	ODUkP locked signal	Connectivity	CEP+(MIP codir)/CEP+(MEP)/MEP/MIP codir CEP+(MIP contradir)/MIP contradir	DIGITAL_OTN	ODU_FLEX, ODU0, ODU1, ODU2, ODU2E, ODU3, ODU4, ODU_CN	Major	**LCK** cLCK <- dLCK and (not CI_SSF) ODUP trail termination sink function (ODUP_TT_Sk)	
89	LCK	CONTRA not strictly necessary but maybe preferable	ODU_TCM_LCK	ODUkT locked signal	Connectivity	TCM-MEP/TCM-MIP	DIGITAL_OTN	ODU_FLEX, ODU0, ODU1, ODU2, ODU2E, ODU3, ODU4, ODU_CN	Minor	**LCK** cLCK <- dLCK and (not CI_SSF) ODUT trail termination sink function (ODUT_TT_Sk) ODUT non-intrusive monitoring function (ODUTm_TT_Sk)	Note that TCM-MEP and TCM-MIP instances include codir/contradir info

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90	LOF	[Only for 2.1.3: OTU]	OTU_LOF	OTUk loss of frame	Connectivity	CEP/MEP	DIGITAL_OTN	OTU1, OTU2, OTU3, OTU4, OTU_CN (2.1.3 OCH, OTSi)	Critical	**LOF** OTSi to OTUk adaptation sink function (OTSi/OTUk_A_Sk) OTSi to OTUkV adaptation sink function (OTSi/OTUkV_A_Sk) OTSiG to OTUk adaptation sink function (OTSiG/OTUk_A_Sk) OTSiG to OTUkV adaptation sink function (OTSiG/OTUkV_A_Sk) OTSi to OTUCn adaptation sink function (OTSi/OTUCn_A_Sk) OTSiG to OTUCn adaptation sink function (OTSiG/OTUCn_A_Sk)	**OTSi/OTUk_A_Sk, OTSi/OTUkV_A_Sk, OTSiG/OTUkV_A_Sk** cLOF <- dLOF and (not dLOS-P) and (not dAIS) and (not AI_TSF P) **OTSiG/OTUk_A_Sk** dLOF: If the optional frame alignment process is present: - "If the frame alignment process is in the out-of-frame (OOF) state for 3 ms, dLOF shall be declared." , otherwise: - dLOF <- ∑dLOFLANE[i] **OTSi/OTUCn_A_Sk, OTSiG/OTUCn_A_Sk** cLOF <- dLOF and (not ∑dLOS-P[i]) and (not AI_TSF-P)
91	LOM	[Only for 2.1.3: OTU]	OTU_LOM	OTUk loss of multiframe	Connectivity	CEP/MEP	PHOTONIC_MEDIA, DIGITAL_OTN	OTU1, OTU2, OTU3, OTU4, OTU_CN (2.1.3 OCH, OTSi)	Major	**LOM** OTSi to OTUk adaptation sink function (OTSi/OTUk_A_Sk) OTSi to OTUkV adaptation sink function (OTSi/OTUkV_A_Sk) OTSiG to OTUk adaptation sink function (OTSiG/OTUk_A_Sk) OTSiG to OTUkV adaptation sink function (OTSiG/OTUkV_A_Sk) OTSi to OTUCn adaptation sink function (OTSi/OTUCn_A_Sk) OTSiG to OTUCn adaptation sink function (OTSiG/OTUCn_A_Sk)	**OTSi/OTUk_A_Sk, OTSi/OTUkV_A_Sk, OTSiG/OTUkV_A_Sk** cLOM <- dLOM and (not dLOS-P) and (not dLOF) and (not dAIS) and (not AI_TSF P) **OTSiG/OTUk_A_Sk** cLOM <- dLOM and (not dLOF) and (not ∑dLOS-P[i]) **OTSi/OTUCn_A_Sk, OTSiG/OTUCn_A_S** cLOM <- dLOM and (not ∑dLOS-P[i]) and (not dLOF) and (not AI_TSF-P)
92	LOM	For further definition	FLEX_O_LOM? For further definition	FlexO loss of multiframe	Connectivity	CEP/MEP	DIGITAL_OTN	For further definition	Major	**LOM** OTSi/FlexO-1-SC_A_Sk OTSiG/FlexO_A_Sk	
93	LOFLOM	[Only for 2.1.3: OTU]	OTU_LOFLOM	Loss of frame and multiframe	Connectivity	CEP/MEP	PHOTONIC_MEDIA, DIGITAL_OTN	OTU1, OTU2, OTU3, OTU4, OTU_CN (2.1.3 OCH, OTSi)		**LOFLOM** cLOFLOM <- dLOFLOM and (not dLOL) and (not dLOS-P) and (not AI_TSF P) OTSi to OTUk-RS adaptation sink function (OTSi/OTUk-RS_A_Sk; k=25u,25,50u,50)	
94	LOFLOM	For further definition	OTU_FLEX_O_LOFLOM? For further definition	Loss of frame and multiframe	Connectivity	CEP/MEP	DIGITAL_OTN	For further definition		**LOFLOM[i]** FlexO-n/OTUCni_A_Sk **LOFLOM** FlexO-n/OTUCn_A_Sk	
95	LOFLOM		ODU_LOFLOM	Loss of frame and multiframe	Connectivity	CEP/MEP	DIGITAL_OTN	ODU_FLEX, ODU0, ODU1, ODU2, ODU2E, ODU3, ODU4, ODU_CN		**LOFLOM (p)** ODUkP to ODU[i]j adaptation sink function (ODUkP/ODU[i]j_A_Sk) ODUkP to ODUj payload type 21 adaptation sink function (ODUkP/ODUj-21_A_Sk) HAO-capable ODUkP to ODUj payload type 21 adaptation sink function (HAO-capable ODUkP-h/ODUj-21_A_Sk) ODUCnP to ODUk adaptation sink function (ODUCnP/ODUk_A_Sk)	**ODUkP/ODU[i]j_A_Sk** For each ODU[i]j tributary port #p: cLOFLOM[p] <- dLOFLOM[p] and (not dPLM) and (not AI_TSF) **ODUkP/ODUj-21_A_Sk** For each ODUj tributary port #p: cLOFLOM[p] <- dLOFLOM[p] and (not dPLM) and (not dLOOMFI) and (not AI_TSF) **ODUkP-h/ODUj-21_A_Sk** For each ODUj tributary port #p: cLOFLOM[p] <- dLOFLOM[p] and (not dPLM) and (not dLOOMFI) and (not AI_TSF) **ODUCnP/ODUk_A_Sk** For each ODUk tributary port #p: cLOFLOM[p] <- dLOFLOM[p] and (not dPLM) and (not dLOOMFI) and (not AI_TSF)
96	LOOMFI		ODU_LOOMFI	Loss of OPU Multiframe Indication	Connectivity	CEP/MEP	DIGITAL_OTN	ODU_FLEX, ODU0, ODU1, ODU2, ODU2E, ODU3, ODU4, ODU_CN		**LOOMFI** ODUkP to ODUj payload type 21 adaptation sink function (ODUkP/ODUj-21_A_Sk) HAO-capable ODUkP to ODUj payload type 21 adaptation sink function (HAO-capable ODUkP-h/ODUj-21_A_Sk) ODUCnP to ODUk adaptation sink function (ODUCnP/ODUk_A_Sk)	**ODUkP/ODUj-21_A_Sk, ODUkP-h/ODUj-21_A_Sk** For ODUk with k=4, 25(u), 50(u): cLOOMFI <- dLOOMFI and (not AI_TSF) **ODUCnP/ODUk_A_Sk** cLOOMFI <- dLOOMFI and (not AI_TSF)
97	RCOHM		ODU_RCOHM	Resize Control Overhead Mismatch	Connectivity	CEP/MEP	DIGITAL_OTN	ODU_FLEX, ODU0, ODU1, ODU2, ODU2E, ODU3		**RCOHM** cRCOHM <- dRCOHM and (not AI_TSF) HAO-capable ODUkP to ODUj payload type 21 adaptation sink function (HAO capable ODUkP-h/ODUj-21_A_Sk)	

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98	LOL	For further definition	FLEX_O_LOL? For further definition	Loss Of Lane	Connectivity	CEP/MEP	DIGITAL_OTN	For further definition	Major	**LOL** OTSi to FlexO-1-SC adaptation sink function (OTSi/FlexO-1-SC_A_Sk) OTSiG to FlexO adaptation sink function (OTSiG/FlexO_A_Sk)	**OTSi/FlexO-1-SC_A_Sk** cLOL <- dLOL and (not $\sum$dLOS-P[i]) **OTSiG/FlexO_A_Sk** cLOL <- dLOL and (not $\sum$dLOS-P[i]) and (not AI_TSF P)
99	LOL	[Only for 2.1.3: OTU]	OTU_LOL	Loss Of Lane	Connectivity	CEP/MEP	PHOTONIC_MEDIA, DIGITAL_OTN	OTU1, OTU2, OTU3, OTU4, OTU_CN FlexO for further study (2.1.3 OCH, OTSi)	Major	**LOL** [OTSi to OTUk-RS adaptation sink function (OTSi/OTUk-RS_A_Sk; k=25u,25,50u,50)]? OTSiG to OTUk adaptation sink function (OTSiG/OTUk_A_Sk) OTSi to OTUCn adaptation sink function (OTSi/OTUCn_A_Sk) OTSiG to OTUCn adaptation sink function (OTSiG/OTUCn_A_Sk) FlexO-n to OTUCn adaptation sink function (FlexO-n/OTUCn_A_Sk) FlexO-n to OTUCni adaptation sink function (FlexO-n/OTUCni_A_Sk)	**[OTSi/OTUk-RS_A_Sk; k=25u,25,50u,50** cLOL <- dLOL and (not dLOS-P) and (not AI_TSF P)]? **OTSiG/OTUk_A_Sk** cLOL <- (dLOL or $\sum$dLOFLANE[i]) and (not $\sum$dLOS-P[i]) **OTSi/OTUCn_A_Sk - Foreseen by G.874, not foreseen by G.798** **OTSiG/OTUCn_A_Sk - Foreseen by G.874, not foreseen by G.798** **FlexO-n/OTUCn_A_Sk** cLOL <- dLOL and (not ($\sum$(dLOFLOM[i] and (not AI_TSF[i])))) **FlexO-n/OTUCni_A_Sk** cLOL[i] <- dLOL[i] and (not dGIDM) and (not dFMM) and (not dPLM) and (not ($\sum$(dLOFLOM[i,j] and (not AI_TSF[i,j]))))
100	MSIM		ODU_MSIM	Multiplex Structure Identifier Mismatch	Connectivity	CEP/MEP	DIGITAL_OTN	ODU_FLEX, ODU0, ODU1, ODU2, ODU2E, ODU3, ODU4, ODU_CN		**MSIM** ODUkP to ODU[i]j adaptation sink function (ODUkP/ODU[i]j_A_Sk) ODUkP to ODUj payload type 21 adaptation sink function (ODUkP/ODUj-21_A_Sk) HAO-capable ODUkP to ODUj payload type 21 adaptation sink function (HAO-capable ODUkP-h/ODUj-21_A_Sk) ODUCnP to ODUk adaptation sink function (ODUCnP/ODUk_A_Sk)	**ODUkP/ODU[i]j_A_Sk** For each ODUj[i] tributary port #p: cMSIM[p] <- dMSIM[p] and (not dPLM) and (not AI_TSF) **ODUkP/ODUj-21_A_Sk** For each ODUj tributary port #p: cMSIM[p] <- dMSIM[p] and (not dPLM) and (not dLOOMFI) and (not AI_TSF) **ODUkP-h/ODUj-21_A_Sk** For each ODUj tributary port #p: cMSIM[p] <- dMSIM[p] and (not dPLM) and (not dLOOMFI) and (not AI_TSF) **ODUCnP/ODUk_A_Sk** For each ODUk tributary port #p: cMSIM[p] <- dMSIM[p] and (not dPLM) and (not dLOOMFI) and (not AI_TSF)
101	MSIM		OTSi_MSIM	Multiplex Structure Identifier Mismatch	Connectivity	CEP/MEP	PHOTONIC_MEDIA	OTSiMC (2.1.3 also OCH)		**MSIM** OMS-O/OTSiG@OCh-O_A_Sk	
102	OCI	CONTRA	ODU_OCI ODU_CONTRA_OCI	ODUkP open connection indication. Indication for an ODUk PM open connection. This alarm is generated when the output port is not connected to the input port and the STAT byte value is "110".	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	DIGITAL_OTN	ODU_FLEX, ODU0, ODU1, ODU2, ODU2E, ODU3, ODU4, ODU_CN	Major	**OCI** cOCI <- dOCI and (not CI_SSF) ODUP trail termination sink function (ODUP_TT_Sk)	
103	OCI	CONTRA not strictly necessary but maybe preferable	ODU_TCM_OCI	ODUkT open connection indication	Connectivity	TCM-MEP/TCM-MIP	DIGITAL_OTN	ODU_FLEX, ODU0, ODU1, ODU2, ODU2E, ODU3, ODU4, ODU_CN	Minor	**OCI** cOCI <- dOCI and (not CI_SSF) ODUT trail termination sink function (ODUT_TT_Sk) ODUT non-intrusive monitoring function (ODUTm_TT_Sk)	Note that TCM-MEP and TCM-MIP instances include codir/contradir info
104	DEG	[Only for 2.1.3: OTU]	OTU_DEG	signal degrade	Connectivity	CEP/MEP	PHOTONIC_MEDIA, DIGITAL_OTN	OTU1, OTU2, OTU3, OTU4, OTU_CN (2.1.3 OCH, OTSi)	Minor	**DEG** OTU trail termination sink function (OTU_TT_Sk) OTUkV trail termination sink function (OTUkV_TT_Sk)	**OTU_TT_Sk** cDEG <- dDEG and (not CI_SSF) and (not dAIS) and (not (dTIM and (not TIMActDis))) **OTUkV_TT_Sk** cDEG <- dDEG and (not CI_SSF) and (not (dTIM and (not TIMActDis)))
105	DEG	CONTRA	ODU_DEG ODU_CONTRA_DEG	signal degrade	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	DIGITAL_OTN	ODU_FLEX, ODU0, ODU1, ODU2, ODU2E, ODU3, ODU4, ODU_CN	Minor	**DEG** cDEG <- dDEG and (not CI_SSF) and (not dAIS) and (not dOCI) and (not dLCK) and (not (dTIM and (not TIMActDis))) ODUP trail termination sink function (ODUP_TT_Sk)	
106	DEG	CONTRA not strictly necessary but maybe preferable	ODU_TCM_DEG	signal degrade	Connectivity	TCM-MEP/TCM-MIP	DIGITAL_OTN	ODU_FLEX, ODU0, ODU1, ODU2, ODU2E, ODU3, ODU4, ODU_CN	Minor	**DEG** cDEG <- dDEG and (not CI_SSF) and (not dAIS) and (not dLTC) and (not dOCI) and (not dLCK) and (not (dTIM and (not TIMActDis))) ODUT trail termination sink function (ODUT_TT_Sk) ODUT non-intrusive monitoring function (ODUTm_TT_Sk)	Note that TCM-MEP and TCM-MIP instances include codir/contradir info

Index	Probable Cause / Alarm Condition Name	Alarm Qualifier	Probable Cause / Alarm Condition Name & LPQ & Alarm Qualifier [empty: equal to Alarm Condition Name]	Description (text, in yang comment, not a data node)	Alarm Category	Target Object Type	Layer Protocol Name	Layer Protocol Qualifier	Perceived Severity	ITU-T G.798, G.874 / ITU-T 7041 - Generic framing procedure / ITU-T G.806 - Characteristics of transport equipment – Description methodology and generic functionality	Other Notes
107	PLM		ODU_PLM	ODUk payload mismatch	Connectivity	CEP/MEP	DIGITAL_OTN	ODU_FLEX, ODU0, ODU1, ODU2, ODU2E, ODU3, ODU4, ODU_CN	Major	PLM cPLM <- dPLM and (not AI_TSF) ODUkP to ODU[ij] adaptation sink function (ODUkP/ODU[ij]_A_Sk) ODUkP to ODUj payload type 21 adaptation sink function (ODUkP/ODUj-21_A_Sk) HAO-capable ODUkP to ODUj payload type 21 adaptation sink function (ODUkP-h/ODUj-21_A_Sk) ODUCnP to ODUk adaptation sink function (ODUCnP/ODUk_A_Sk)	
108	PLM	For further definition	OTU_FLEX_O_PLM? For further definition		Connectivity	CEP/MEP	DIGITAL_OTN	For further definition	Major	PLM cPLM <- dPLM and (not dGIDM) and (not dFMM) FlexO-n to OTUCni adaptation sink function (FlexO-n/OTUCni_A_Sk)	
109	TIM	[Only for 2.1.3: OTU]	OTU_TIM	OTUk trail trace identifier mismatch	Connectivity	CEP/MEP	PHOTONIC_MEDIA, DIGITAL_OTN	OTU1, OTU2, OTU3, OTU4, OTU_CN (2.1.3 OCH, OTSi)	Minor	TIM OTU trail termination sink function (OTU_TT_Sk) OTUkV trail termination sink function (OTUkV_TT_Sk)	**OTU_TT_Sk** cTIM <- dTIM and (not CI_SSF) and (not dAIS) **OTUkV_TT_Sk** cTIM <- dTIM and (not CI_SSF)
110	TIM	CONTRA	ODU_TIM ODU_CONTRA_TIM	ODUkP trail trace identifier mismatch. This alarm occurs when the received TTI value of the PM section is not consistent with the TTI value to receive.	Connectivity	CEP+(MIP codir)/CEP+(MEP) /MEP/MIP codir CEP+(MIP contradir)/MIP contradir	DIGITAL_OTN	ODU_FLEX, ODU0, ODU1, ODU2, ODU2E, ODU3, ODU4, ODU_CN	Minor	TIM cTIM <- dTIM and (not CI_SSF) and (not dAIS) and (not dOCI) and (not dLCK) ODUP trail termination sink function (ODUP_TT_Sk)	
111	TIM	CONTRA not strictly necessary but maybe preferable	ODU_TCM_TIM	ODUkT trace identifier mismatch	Connectivity	TCM-MEP/TCM-MIP	DIGITAL_OTN	ODU_FLEX, ODU0, ODU1, ODU2, ODU2E, ODU3, ODU4, ODU_CN	Minor	TIM cTIM <- dTIM and (not CI_SSF) and (not dAIS) and (not dLTC) and (not dOCI) and (not dLCK) ODUT trail termination sink function (ODUT_TT_Sk) ODUT non-intrusive monitoring function (ODUTm_TT_Sk)	Note that TCM-MEP and TCM-MIP instances include codir/contradir info
112	LTC	CONTRA not strictly necessary but maybe preferable	ODU_TCM_LTC	ODUkT loss of tandem connection	Connectivity	TCM-MEP/TCM-MIP	DIGITAL_OTN	ODU_FLEX, ODU0, ODU1, ODU2, ODU2E, ODU3, ODU4, ODU_CN	Minor	LTC cLTC <- dLTC and (not CI_SSF) ODUT trail termination sink function (ODUT_TT_Sk) ODUT non-intrusive monitoring function (ODUTm_TT_Sk)	Note that TCM-MEP and TCM-MIP instances include codir/contradir info
113	FOP_PM		ODU_FOP_PM	ODU linear protection failure of protocol provisioning mismatch	Connectivity	Switch or CEP	DIGITAL_OTN	ODU_FLEX, ODU0, ODU1, ODU2, ODU2E, ODU3, ODU4	Minor	FOP-PM cFOP-PM <- dFOP-PM and (not CI_SSF/TSF) ODUk connection function (ODU_C)	Note that ODU_C function means ODUk connection function (ODUk_C), ODUCn is excluded from the ODU_C function.
114	FOP_NR		ODU_FOP_NR	ODU linear protection failure of protocol no response defect	Connectivity	Switch or CEP	DIGITAL_OTN	ODU_FLEX, ODU0, ODU1, ODU2, ODU2E, ODU3, ODU4	Minor	FOP-NR cFOP-NR <- dFOP-NR and (not CI_SSF/TSF) ODUk connection function (ODU_C)	Note that ODU_C function means ODUk connection function (ODUk_C), ODUCn is excluded from the ODU_C function.
115	FCS_ERR_EXC		DSR_FCS_ERR_EXC	Frame-check sequence error.	Connectivity	CEP/MEP	DSR, ETH	GBE, 10_GBE_WAN, 10_GBE_LAN, 100_GBE	Major	ITU-T G.806 Client-specific GFP-F / GFP-T sink processes p_FCSError ← ∑ n_FCSError	Added "EXC" to clarify that is an excessive number of FCS errors
116	LFD		DSR_LFD	GFP Loss of Frame Delineation.	Connectivity	CEP/MEP	DSR, ETH	GBE, 10_GBE_WAN, 10_GBE_LAN, 100_GBE, FC_1200, FLEX_E (for further study)	Major	ODU2P to 10G Ethernet Reconciliation Sublayer adaptation sink function (ODU2P/ERS10G_A_Sk) ODUkP to ETH adaptation sink function (ODUkP/ETH_A_Sk) HAO-capable ODUk to ETH adaptation sink function (ODUkP-h/ETH_A_Sk) ODU2eP to FC-1200 client adaptation sink function (ODU2eP/FC-1200_A_Sk) ITU-T G.806 / G.7041 Server layer-specific GFP sink processes cLFD (Loss of Frame Delineation)	
117	UPM		DSR_UPM	GFP user payload mismatch	Connectivity	CEP/MEP	DSR, ETH	GBE, 10_GBE_WAN, 10_GBE_LAN, 100_GBE FLEX_E (for further study)	Major	ODU2P to 10G Ethernet Reconciliation Sublayer adaptation sink function (ODU2P/ERS10G_A_Sk) ODUkP to ETH adaptation sink function (ODUkP/ETH_A_Sk) HAO-capable ODUk to ETH adaptation sink function (ODUkP-h/ETH_A_Sk) ITU-T G.806 GFP Payload type supervision dUPM (User Payload Mismatch)	
118	EXM		DSR_EXM	GFP extension header mismatch defect	Connectivity	CEP/MEP	DSR, ETH	GBE, 10_GBE_WAN, 10_GBE_LAN, 100_GBE FLEX_E (for further study)	Major	ODU2P to 10G Ethernet Reconciliation Sublayer adaptation sink function (ODU2P/ERS10G_A_Sk) ODUkP to ETH adaptation sink function (ODUkP/ETH_A_Sk) HAO-capable ODUk to ETH adaptation sink function (ODUkP-h/ETH_A_Sk) ITU-T G.806 GFP Payload type supervision dEXM (Extension Header Mismatch)	
119	LOF		DSR_LOF	Loss of frame	Connectivity	CEP/MEP	DSR	STM_1, STM_4, STM_16, STM_64, STM_256, OC_3, OC_12, OC_48, OC_192, OC_768, FLEX_E (for further study)	Critical	LOF OSM256.4 to CBRx adaptation source function (OSM256.4/CBRx_So) ODUkP to RSn adaptation sink function (ODUkP/RSn_A_Sk) OTSi to RSn adaptation sink function (OTSi/RSn_A_Sk) ODUflexP to FlexE sub-group adaptation sink function using BGMP (ODUflexP/FlexESG_A_Sk)	**OSM256.4/CBRx_So** cLOF <- dLOF **ODUkP/RSn_A_Sk** cLOF <- dLOF and (not dAIS) and (not dPLM) and (not AI_TSF) **ODUflexP/FlexESG_A_Sk** cLOF <- dLOF and (not dLCS) and (not dCSACM) and (not dCSF) and (not dPLM) and (not AI_TSF) **OTSi/RSn_A_Sk** cLOF <- dLOF and (not dLOS-P) and (not dAIS) and (not AI_TSF-P)

Index	Probable Cause / Alarm Condition Name	Alarm Qualifier	Probable Cause / Alarm Condition Name & LPQ & Alarm Qualifier [empty: equal to Alarm Condition Name]	Description (text, in yang comment, not a data node)	Alarm Category	Target Object Type	Layer Protocol Name	Layer Protocol Qualifier	Perceived Severity	ITU-T G.798, G.874 ITU-T 7041 - Generic framing procedure ITU-T G.806 - Characteristics of transport equipment – Description methodology and generic functionality	Other Notes
120	LOM		DSR_LOM	Loss Of Multiframe	Connectivity	CEP/MEP	DSR	FLEX_E (for further study)	Critical	**LOM** cLOM <- dLOM and (not dLOF) and (not dLCS) and (not dCSACM) and (not dCSF) and (not dPLM) and (not AI_TSF) ODUflexP to FlexE sub-group adaptation sink function using BGMP (ODUflexP/FlexESG_A_Sk)	
121	LOL		DSR_LOL	Loss Of Lane	Connectivity	CEP/MEP	DIGITAL_OTN	For further study	Major	**LOL** ODUflexP/FlexESG_A_So	
122	PLM		DSR_PLM	DSR payload mismatch	Connectivity	CEP/MEP	DSR, ETH	STM_1, STM_4, STM_16, STM_64, STM_256, OC_3, OC_12, OC_48, OC_192, OC_768, GBE, 10_GBE_WAN, 10_GBE_LAN, 40_GigE, 100_GBE, FC_1200, FLEX_E (for further study)	Major	**PLM** cPLM <- dPLM and (not AI_TSF) ODUkP to CBRx adaptation function using AMP and BMP - sink (ODUkP/CBRx_A_Sk) ODUkP to CBRx adaptation sink function using GMP (ODUkP/CBRx-g_A_Sk) ODUP to NULL adaptation sink function (ODUP/NULL_A_Sk) ODUP to PRBS adaptation sink function (ODUP/PRBS_A_Sk) ODUkP to RSn adaptation sink function (ODUkP/RSn_A_Sk) ODUkP to ETH adaptation sink function (ODUkP/ETH_A_Sk) HAO-capable ODUk to ETH adaptation sink function (ODUk-h/ETH_A_Sk) ODU2P to 10G Ethernet Reconciliation Sublayer adaptation sink function (ODU2P/ERS10G_A_Sk) ODU2eP to FC-1200 client adaptation sink function (ODU2eP/FC-1200_A_Sk) ODUflexP to FlexE client adaptation sink function using IMP (ODUflexP/FlexEC_A_Sk) ODUflexP to FlexE sub-group adaptation sink function using BGMP (ODUflexP/FlexESG_A_Sk) ODUflexP to ETCy adaptation sink function using BMP (ODUflexP/ETCy_A_Sk)	
123	LCS		DSR_LCS	Loss of Character Synchronization	Connectivity	CEP/MEP	DSR	For further study	Major	**LCS** ODUkP to CBRx adaptation sink function using GMP (ODUkP/CBRx-g_A_Sk) ODUflexP to FlexE client adaptation sink function using IMP (ODUflexP/FlexEC_A_Sk) ODUflexP to FlexE sub-group adaptation sink function using BGMP (ODUflexP/FlexESG_A_Sk) ODUflexP to ETCy adaptation sink function using BMP (ODUflexP/ETCy_A_Sk)	**ODUkP/CBRx-g_A_Sk** cLCS <- dLCS and (not dCSF) and (not dPLM) and (not AI_TSF) **ODUflexP/FlexEC_A_Sk** cLCS <- dLCS and (not dPLM) and (not AI_TSF) **ODUflexP/FlexESG_A_Sk** cLCS <- dLCS and (not dCSACM) and (not dCSF) and (not dPLM) and (not AI_TSF) **ODUflexP/ETCy_A_Sk** cLCS <- dLCS and (not dPLM) and (not AI_TSF)
124	LRC		DSR_LRC	Loss of Rate Compensation (RC) blocks	Connectivity	CEP/MEP	DSR	For further study	Major	**LRC** cLRC <- dLRC and (not dLCS) and (not dPLM) and (not AI_TSF) ODUflexP to ETCy adaptation sink function using BMP (ODUflexP/ETCy_A_Sk)	
125	LSS		DSR_LSS	Loss of pseudo-random bit Sequence lock	Connectivity	CEP/MEP	DSR	For further study	Major	**LSS** cLSS <- dLSS and (not AI_TSF) and (not dPLM) ODUP to PRBS adaptation sink function (ODUP/PRBS_A_Sk)	
126	CSACM		DSR_CSACM	Calendar Slot Availability Count Mismatch	Connectivity	CEP/MEP	DSR	For further study	Major	**CSACM** cCSACM <- dCSACM and (not dCSF) and (not dPLM) and (not AI_TSF) ODUflexP to FlexE sub-group adaptation sink function using BGMP (ODUflexP/FlexESG_A_Sk)	
127	CSUM		DSR_CSUM	Calendar Slot Unavailability Mismatch	Connectivity	CEP/MEP	DSR	For further study	Major	**CSUM** cCSUM <- dCSUM and (not dLOL) and (not dFMM) and (not dGIDM) and (not CI_SSF) ODUflexP to FlexE sub-group adaptation source function using BGMP (ODUflexP/FlexESG_A_So)	
128	GIDM		DSR_GIDM	Group Identification Mismatch	Connectivity	CEP/MEP	DSR	For further study	Major	**GIDM** cGIDM <- dGIDM and (not CI_SSF) ODUflexP to FlexE sub-group adaptation source function using BGMP (ODUflexP/FlexESG_A_So)	
129	GIDM		OTU_FLEX_O_GIDM	Group Identification Mismatch	Connectivity	CEP/MEP	DSR	For further study	Major	**GIDM** cGIDM <- dGIDM FlexO-n to OTUCn adaptation sink function (FlexO-n/OTUCn_A_Sk) FlexO-n to OTUCni adaptation sink function (FlexO-n/OTUCni_A_Sk)	
130	FMM		DSR_FMM	FlexE Map Mismatch	Connectivity	CEP/MEP	DSR	For further study	Major	**FMM** cFMM <- dFMM and (not dGIDM) and (not CI_SSF) ODUflexP to FlexE sub-group adaptation source function using BGMP (ODUflexP/FlexESG_A_So)	
131	FMM		OTU_FLEX_O_FMM	FlexO Map Mismatch	Connectivity	CEP/MEP	DSR	For further study	Major	**FMM** cFMM <- dFMM and (not dGIDM) FlexO-n to OTUCn adaptation sink function (FlexO-n/OTUCn_A_Sk) FlexO-n to OTUCni adaptation sink function (FlexO-n/OTUCni_A_Sk)	

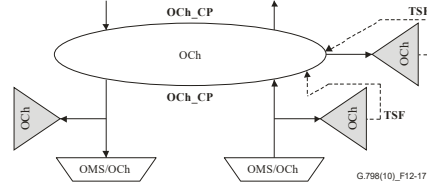| Index	Probable Cause / Alarm Condition Name	Alarm Qualifier	Probable Cause / Alarm Condition Name & LPQ & Alarm Qualifier [empty: equal to Alarm Condition Name]	Description (text, in yang comment, not a data node)	Alarm Category	Target Object Type	Layer Protocol Name	Layer Protocol Qualifier	Perceived Severity	ITU-T G.798, G.874 / ITU-T 7041 - Generic framing procedure / ITU-T G.806 - Characteristics of transport equipment – Description methodology and generic functionality	Other Notes

132	MSIM		OTU_FLEX_O_MSIM	Multiplex Structure Identifier Mismatch	Connectivity	CEP/MEP	DSR	For further study	Major	**MSIM**
										Per OTUCni tributary port #i (i = 1..N):
										cMSIM[i] <- dMSIM[i] and (not dGIDM) and (not dFMM) and (not dPLM)
										FlexO-n to OTUCni adaptation sink function (FlexO-n/OTUCni_A_Sk)	

133	CSF		DSR_CSF	Client-side signal failure	Connectivity	CEP/MEP	DSR	GBE, 10_GBE_WAN, 10_GBE_LAN, 40_GigE, 100_GBE, FC_1200, FLEX_E (for further study)	Minor	**CSF** ODUkP to CBRx adaptation function using AMP and BMP - sink (ODUkP/CBRx_A_Sk) ODUkP to CBRx adaptation sink function using GMP (ODUkP/CBRx-g_A_Sk) ODUflexP to FlexE client adaptation sink function using IMP (ODUflexP/FlexEC_A_Sk) ODUflexP to FlexE sub-group adaptation sink function using BGMP (ODUflexP/FlexESG_A_Sk) ODUflexP to ETCy adaptation sink function using BMP (ODUflexP/ETCy_A_Sk) ODU2eP to FC-1200 client adaptation sink function (ODU2eP/FC-1200_A_Sk) ODU2P to 10G Ethernet Reconciliation Sublayer adaptation sink function (ODU2P/ERS10G_A_Sk) ODUkP to ETH adaptation sink function (ODUkP/ETH_A_Sk) HAO-capable ODUk to ETH adaptation sink function (ODUkP-h/ETH_A_Sk)	**ODU2P/ERS10G_A_Sk** cCSF <- (dCSF-LOS or dCSF-OPU) and (not dEXM) and (not dUPM) and (not dLFD) and (not AI_TSF) and CSF_Reported. **ODUkP/ETH_A_Sk, ODUkP-h/ETH_A_Sk** cCSF <- (dCSF-LOS or dCSF-OPU or dCSF-FDI) and (not dEXM) and (not dUPM) and (not dPLM) and (not dLFD) and (not AI_TSF) and CSF_Reported **All others** cCSF <- dCSF and (not dPLM) and (not AI_TSF)
134	LOSS_OF_GFP_SYNC	"Gigabit Ethernet 8B/10B loss of synchronization", or "Fibre channel 8B/10B loss of synchronization"		Loss of synchronization	Connectivity	CEP/MEP	DSR	For further study	Critical	ITU-T G.7041 - Generic framing procedure Fibre channel 8B/10B loss of synchronization Gigabit Ethernet 8B/10B loss of synchronization	
135	REM_CLIENT_SF			Remote client signal failure. This alarm occurs when the client side of the unit at the opposite station fails to receive signals (for example, when there is a LOS or LOF alarm).	Connectivity	CEP/MEP	DSR	Any applicable L1 qualifier or only Ethernet. For further study	Minor	**dCSF-RDI** G.8021 - ETH-specific GFP-F sink process: cCSF <- (dCSF-RDI or dCSF-FDI or dCSF-LOS) and (not dUPM) and (not GFP_SF) and CSF_Reported.	G.8021: Reception of a CSF frame that indicates a client reverse defect indication

Index	Threshold Parameter / Threshold Indicator Name	TCA Qualifier	Threshold Parameter / Threshold Indicator Name & LPQ & TCA Qualifier [empty: equal to Threshold Indicator Name]	Description (text, in yang comment, not a data node)	TCA Category	Target Object Type	Layer Protocol Name of Target Object	Layer Protocol Qualifier of Target Object	Perceived Severity	ITU-T G.798, G.874 / ITU-T 7041 - Generic framing procedure / ITU-T G.806 - Characteristics of transport equipment – Description methodology and generic functionality	Other Notes
1	NATIVE				All	All	All	All	All		When there is no standard PM parameter name corresponding to the native PM parameter name
2	FEC_CORRECTED_ERROR			Error corrected by FEC	Connectivity	CEP/MEP/ CurrentData	DIGITAL_OTN	OTU1, OTU2, OTU3, OTU4, OTU_CN FLEX_O, DSR for further definition (2.1.3 OCH, OTSi)	Warning	**pFECcorrErr** OTSi to OTUk adaptation sink function (OTSi/OTUk_A_Sk) OTSi to OTUkV adaptation sink function (OTSi/OTUkV_A_Sk) OTSi to OTUk-RS adaptation sink function (OTSi/OTUk-RS_A_Sk; k=25u,25,50u,50) OTSiG to OTUk adaptation sink function (OTSiG/OTUk_A_Sk) OTSiG to OTUkV adaptation sink function (OTSiG/OTUkV_A_Sk) OTSi to OTUCn adaptation sink function (OTSi/OTUCn_A_Sk) OTSiG to OTUCn adaptation sink function (OTSiG/OTUCn_A_Sk) OTSi to FlexO-1-SC adaptation sink function (OTSi/FlexO-1-SC_A_Sk) OTSiG to FlexO adaptation sink function (OTSiG/FlexO_A_Sk) OSx to CBRx adaptation sink function for 64B/66B encoded clients with optional FEC (OSx/CBRx-b_A_Sk) (x = FC-y) OSx to CBRx adaptation sink function for 64B/66B encoded clients with mandatory FEC (OSx/CBRx-c_A_Sk) (x = FC-y)	pFECcorrErr <- ∑ nFECcorrErr
3	BBE	NE, FE, ~~BID~~, ~~NE_CODIR~~, NE_CONTRA ~~FE_CODIR~~, FE_CONTRA	OTU_NE_BBE ODU_NE_BBE ODU_TCM_NE_BBE OTU_FE_BBE ODU_FE_BBE ODU_TCM_FE_BBE OTU_NE_CONTRA_BBE ODU_NE_CONTRA_BBE ODU_TCM_NE_CONTRA_BBE OTU_FE_CONTRA_BBE ODU_FE_CONTRA_BBE ODU_TCM_FE_CONTRA_BBE	TCA-ODUk/OTUk PM Background Block Error	Connectivity	CEP/MEP/MIP/ CurrentData	PHOTONIC_MEDIA, DIGITAL_OTN	ODU_FLEX, ODU0, ODU1, ODU2, ODU2E, ODU3, ODU4, ODU_CN, OTU1, OTU2, OTU3, OTU4, OTU_CN (2.1.3 OCH, OTSi)	Warning	**BBE** ~~OTSiG-O trail termination sink function (OTSiG-O_TT_Sk)~~ OTU trail termination sink function (OTU_TT_Sk) ODUP trail termination sink function (ODUP_TT_Sk) ODUT trail termination sink function (ODUT_TT_Sk) ODUT non-intrusive monitoring function (ODUTm_TT_Sk)	
4	SES	NE, FE, ~~BID~~, ~~NE_CODIR~~, NE_CONTRA ~~FE_CODIR~~, FE_CONTRA [Only for 2.1.3: OTU]	OTS_NE_SES OS_NE_SES OMS_NE_SES OTSi_NE_SES OTU_NE_SES ODU_NE_SES [Only for 2.1.3: OTS_OMS_NE_SES] etc.	TCA-ODUk/OTUk PM Severely Errored Second	Connectivity	CEP/MEP/MIP/ CurrentData	PHOTONIC_MEDIA, DIGITAL_OTN	OTS_MEDIA, OS_MEDIA, OMS, OTSi, ODU_FLEX, ODU0, ODU1, ODU2, ODU2E, ODU3, ODU4, ODU_CN OTU1, OTU2, OTU3, OTU4, OTU_CN (2.1.3 OMS, OTS_OMS)	Warning	**SES** OTS-O trail termination sink function (OTS-O_TT_Sk) OMS-O trail termination sink function (OMS-O_TT_Sk) OSx trail termination sink function (OSx_TT_Sk) (x = 2G5, 10G, 40G, FC-y) OTSi to OSC adaptation sink function (OTSi/OSC_A_Sk) OTSiG-O trail termination sink function (OTSiG-O_TT_Sk) OTU trail termination sink function (OTU_TT_Sk) ODUP trail termination sink function (ODUP_TT_Sk) ODUT trail termination sink function (ODUT_TT_Sk) ODUT non-intrusive monitoring function (ODUTm_TT_Sk)	
5	UAS	NE, FE, BID, ~~NE_CODIR~~, NE_CONTRADIR ~~FE_CODIR~~, FE_CONTRADIR [Only for 2.1.3: OTU]	OTS_NE_UAS OS_NE_UAS OTSi_NE_UAS OTU_NE_UAS ODU_NE_UAS [Only for 2.1.3: OTS_OMS_NE_UAS] etc.	TCA-ODUk/OTUk PM Unavailable Seconds	Connectivity	CEP/MEP/MIP/ CurrentData	PHOTONIC_MEDIA, DIGITAL_OTN	OTS_MEDIA, OS_MEDIA, OMS, OTSi, ODU_FLEX, ODU0, ODU1, ODU2, ODU2E, ODU3, ODU4, ODU_CN OTU1, OTU2, OTU3, OTU4, OTU_CN (2.1.3 OTS, OMS, OTS_OMS)	Warning	**UAS** OTS-O trail termination sink function (OTS-O_TT_Sk OMS-O trail termination sink function (OMS-O_TT_Sk) OSx trail termination sink function (OSx_TT_Sk) (x = 2G5, 10G, 40G, FC-y) OTSi to OSC adaptation sink function (OTSi/OSC_A_Sk) OTSiG-O trail termination sink function (OTSiG-O_TT_Sk) OTU trail termination sink function (OTU_TT_Sk) ODUP trail termination sink function (ODUP_TT_Sk) ODUT trail termination sink function (ODUT_TT_Sk) ODUT non-intrusive monitoring function (ODUTm_TT_Sk)	
6	DELAY		OTU_DELAY ODU_DELAY	∑ number of frames between the DMValue toggle event and the received DMp signal value toggle event	Connectivity	CEP/MEP/ CurrentData	DIGITAL_OTN	ODU_FLEX, ODU0, ODU1, ODU2, ODU2E, ODU3, ODU4, ODU_CN	Warning	**N_Delay** ODUP trail termination sink function (ODUP_TT_Sk) ODUT trail termination sink function (ODUT_TT_Sk)	
7	OPTICAL_POWER_INPUT		OTS_IN_OPTICAL_POWER OS_IN_OPTICAL_POWER OMS_IN_OPTICAL_POWER MC_IN_OPTICAL_POWER OTSi_IN_OPTICAL_POWER [Only for 2.1.3: OTS_OMS_IN_OPTICAL_POWER] etc.	Power measurements	Connectivity	CEP	PHOTONIC_MEDIA	OTS_MEDIA, OS_MEDIA, OMS, MC, OTSiMC (2.1.3 OTS, OMS, OTS_OMS)	Warning		
8	OPTICAL_POWER_OUTPUT		OTS_OUT_OPTICAL_POWER OS_OUT_OPTICAL_POWER OMS_OUT_OPTICAL_POWER MC_OUT_OPTICAL_POWER OTSi_OUT_OPTICAL_POWER [Only for 2.1.3: OTS_OMS_OUT_OPTICAL_POWER] etc.	Power measurements	Connectivity	CEP	PHOTONIC_MEDIA	OTS_MEDIA, OS_MEDIA, OMS, MC, OTSiMC (2.1.3 OTS, OMS, OTS_OMS)	Warning		

Index	Threshold Parameter / Threshold Indicator Name	TCA Qualifier	Threshold Parameter / Threshold Indicator Name & LPQ & TCA Qualifier [empty: equal to Threshold Indicator Name]	Description (text, in yang comment, not a data node)	TCA Category	Target Object Type	Layer Protocol Name of Target Object	Layer Protocol Qualifier of Target Object	Perceived Severity	ITU-T G.798, G.874 ITU-T 7041 - Generic framing procedure ITU-T G.806 - Characteristics of transport equipment – Description methodology and generic functionality	Other Notes
9	OPTICAL_POWER_INPUT	amplificationLocalId	OMS_IN_OPTICAL_POWER [Only for 2.1.3: OTS_OMS_IN_OPTICAL_POWER]	Power measurements of amplification functions	Connectivity	CEP	PHOTONIC_MEDIA	OMS (2.1.3 OMS, OTS_OMS)	Warning		
10	OPTICAL_POWER_OUTPUT	amplificationLocalId	OMS_OUT_OPTICAL_POWER [Only for 2.1.3: OTS_OMS_OUT_OPTICAL_POWER]	Power measurements of amplification functions	Connectivity	CEP	PHOTONIC_MEDIA	OMS (2.1.3 OMS, OTS_OMS)	Warning		
11	OPTICAL_POWER_INPUT	VOA_amplificationLocalId	OMS_IN_OPTICAL_POWER [Only for 2.1.3: OTS_OMS_IN_OPTICAL_POWER]	Amplification function related measurments	Connectivity	CEP	PHOTONIC_MEDIA	OMS (2.1.3 OMS, OTS_OMS)	Warning		
12	OPTICAL_POWER_OUTPUT	VOA_amplificationLocalId	OMS_OUT_OPTICAL_POWER [Only for 2.1.3: OTS_OMS_OUT_OPTICAL_POWER]	Amplification function related measurments	Connectivity	CEP	PHOTONIC_MEDIA	OMS (2.1.3 OMS, OTS_OMS)	Warning		
13	OPTICAL_POWER_INPUT	OSC	OTS_IN_OPTICAL_POWER [Only for 2.1.3: OTS_OMS_IN_OPTICAL_POWER]	OSC Power measurements	Connectivity	CEP	PHOTONIC_MEDIA	OTS_MEDIA (2.1.3 OTS, OTS_OMS)	Warning		
14	OPTICAL_POWER_OUTPUT	OSC	OTS_OUT_OPTICAL_POWER [Only for 2.1.3: OTS_OMS_OUT_OPTICAL_POWER]	OSC Power measurements	Connectivity	CEP	PHOTONIC_MEDIA	OTS_MEDIA (2.1.3 OTS, OTS_OMS)	Warning		
15	OPTICAL_GAIN	amplificationLocalId	OMS_OPTICAL_GAIN [Only for 2.1.3: OTS_OMS_OPTICAL_GAIN]	Amplification function related measurments	Connectivity	CEP	PHOTONIC_MEDIA	OMS (2.1.3 OMS, OTS_OMS)	Warning		
16	OPTICAL_TILT	amplificationLocalId	OMS_OPTICAL_TILT [Only for 2.1.3: OTS_OMS_OPTICAL_TILT]	Amplification function related measurments	Connectivity	CEP	PHOTONIC_MEDIA	OMS (2.1.3 OMS, OTS_OMS)	Warning		

| Index	Probable Cause / Alarm Condition Name	Threshold Parameter / Threshold Indicator Name	Qualifier	Additional Info	Description (text, in yang comment, not a data node)	Category	Target Object Type	Layer Protocol Name of Target Object	Layer Protocol Qualifier of Target Object	Perceived Severity	ITU-T G.798, G.874 ITU-T 7041 - Generic framing procedure ITU-T G.806 - Characteristics of transport equipment – Description methodology and generic functionality	Other Notes
1	INSERTION-LOSS-HIGH	INSERTION-LOSS			Insertion loss between the TX and RX is beyond threshold. Insufficient input power for the OA to work correctly.	Connectivity	CEP	PHOTONIC_MEDIA	OTS, OMS, OTS_OMS, UNSPECIFIED	Major	This alarm can be raised by various functional entities. It is assumed it is raised on the CEP which is nearest to the actual detection point.	For further analysis, as it may apply to Access Port - where the anomaly is detected. Note that also OTDR related alarms are detected on a "point", even if the mechanism is localizing the failure along the fibre.
2	LOCAL-FAULT maybe this is the signalling				Local Ethernet fault. The local interface has received a local-fault signal from the NE at the far end of the fiber, indicating that no Ethernet signal is being transmitted upstream of (and toward) the local NE.	Connectivity	CEP/MEP/MIP	DSR, ETH	GBE, 10_GBE_WAN, 10_GBE_LAN, 100_GBE	Minor	For further clarification, check IEEE	
3	REMOTE-ETHERNET-FAULT maybe this is the alarm raised when local-fault signal is received				Local Ethernet fault. The local interface has received a local-fault signal from the NE at the far end of the fiber, indicating that no Ethernet signal is being transmitted upstream of (and toward) the local NE.	Connectivity	CEP/MEP/MIP	DSR, ETH	GBE, 10_GBE_WAN, 10_GBE_LAN, 100_GBE	Minor	For further clarification, check IEEE	
4	LASER-TEMP-HIGH				Laser temperature too high	Equipment	Equipment	na	na	Minor		Is it assumed that cannot be related to a specific OTSi CEP?
5	LASER-TEMP-LOW				Laser temperature too low	Equipment	Equipment	na	na	Minor		Is it assumed that cannot be related to a specific OTSi CEP?
6	OA-OUT-PWR-ABN				OA out power abnormal alarm	Equipment	Access Port	na	na	Minor		For further clarification
7	OPR-ABN				Abnormal optical power received	Equipment	Access Port	na	na	Critical		For further clarification
8	REMOTE-FAULT				Remote Ethernet fault. The alarm is indicating a defect in XGE services at the remote end.	Connectivity	CEP/MEP/MIP	DSR	GBE, 10_GBE_WAN, 10_GBE_LAN, 100_GBE	Minor		For further clarification IEEE?
9	RL-CRITICAL-HI				Critical high return loss alarm	Equipment	Access Port	na	na	Critical	Likely Applicable to OTS CEP	
10	RL-CRITICAL-LOW				Critical low return loss alarm	Equipment	Access Port	na	na	Critical	Likely Applicable to OTS CEP	
11	ETH_LOS				ETH Trib Port Loss Of Signal	Connectivity	CEP/MEP/MIP	ETH	GBE, 10_GBE_WAN, 10_GBE_LAN, 100_GBE	Critical	Not found in ITU-T, check 802.3	Which is the difference with respect to other UNI LOS?
12	R_LOS				OTN Client Port Loss Of Signal	Connectivity	CEP/MEP/MIP	DSR	GBE, 10_GBE_WAN, 10_GBE_LAN, 100_GBE, FC_100, FC_200, FC_400, FC_800, FC_1200, FC_1600, FC_3200, STM_1, STM_4, STM_16, STM_64, STM_256, OC_3, OC_12, OC_48, OC_192, OC_768, OTU_1, OTU_2, OTU_2E, OTU_3, OTU_4, GPON, XGPON	Critical	CSF-LOS? ODU2P to 10G Ethernet Reconciliation Sublayer adaptation sink function (ODU2P/ERS10G_A_Sk) ODUkP to ETH adaptation sink function (ODUkP/ETH_A_Sk) HAO-capable ODUk to ETH adaptation sink function (ODUkP-h/ETH_A_Sk)	For further clarification

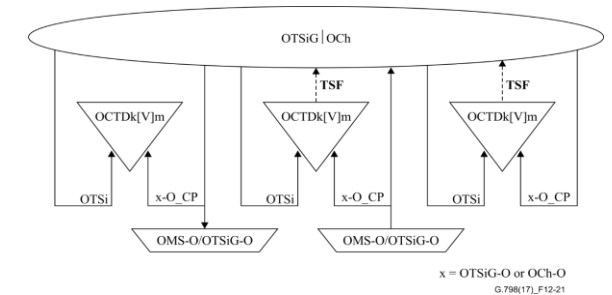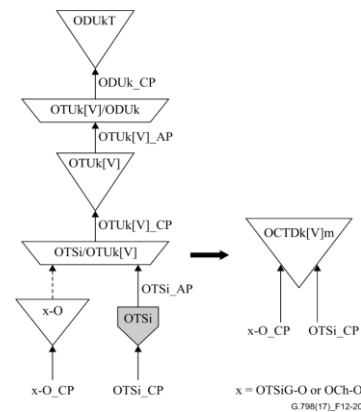| OTSiG|OCh non-intrusive monitor function |
|---|
| As the functionality of the OTSiG and OCh non-intrusive monitor functions is identical to the OTSiG-O_TT_Sk and OCh-O_TT_Sk functions (see clause 12.2.2.2), no dedicated OCh non-intrusive monitoring functions OTSiGm_TT_Sk and OChm_TT_Sk are defined. |

| Combined OTSiG|OCh and OTUk[V] non-intrusive monitor function (OCTk[V]m) |
|---|
| As the OCh and OTUk[V] terminations are always collocated in an OTN network, a combined OCh and OTUk[V] non-intrusive monitor is defined as a compound function OCTk[V]m. The OCTk[V]m compound function is the combination of a OTSiG-O|OCh-O_TT_Sk (see clause 12.2.1.2 or 12.2.2.2), OTSi/OTUk[V]_A_Sk (see clauses 16.1.2 and 16.2.2) and OTUk[V]_TT_Sk (see clauses 13.2.1.2 and 13.2.2.2) |
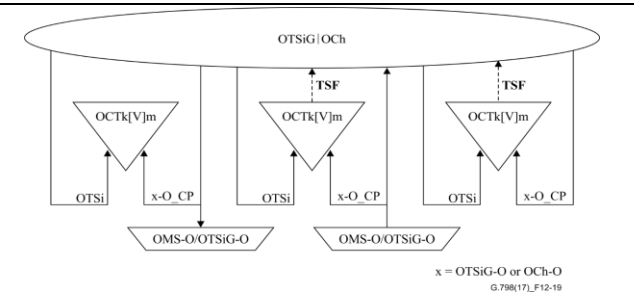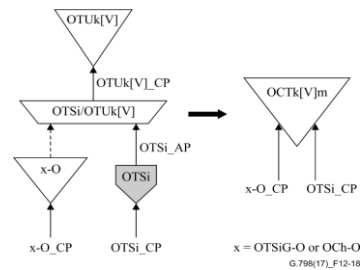
Combined OTSiG|OCh, OTUk[V] and ODUkT non-intrusive monitor function (OCTDk[V]m)
To support detection of bit errors in a serial compound ODUk link connection carried through an OCh domain with 3R regeneration, it is necessary to deploy ODUk tandem connection monitoring between the ODUk connection points at the endpoints of the ODUk serial compound link connection. For this purpose, a combined OCh, OTUk[V] and ODUkT non-intrusive monitor is defined as a compound function OCTDk[V]m. The OCTDk[V]m compound function is the combination of OTSiG-O|OCh-O_TT_Sk (see clause 12.2.1.2 or 12.2.2.2), OTSi/OTUk[V]_A_Sk (see clauses 16.1.2 and 16.2.2), OTUk[V]_TT_Sk (see clauses 13.2.1.2 and 13.2.2.2), OTUk[V]/ODUk_A (see clauses 13.3.1 and 13.3.2) and ODUkT_TT (see clause 14.5.1.1)

ODUP non-intrusive monitor function
As the functionality of the ODUkP non-intrusive monitor function is identical to the ODUP_TT_Sk function (see clause 14.2.1.2), no dedicated ODUP non-intrusive monitoring function ODUPm_TT_Sk is defined.
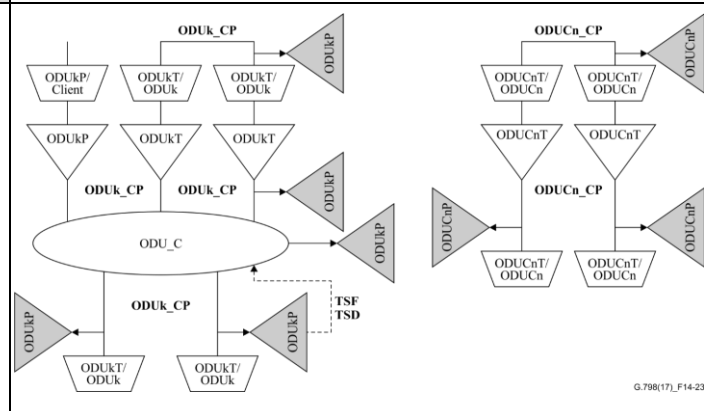
OTU_TT_Sk - Including both OTUk TT_Sk and OTUCn_TT_Sk
ODUP_TT_Sk - Including both ODUkP_TT_Sk (k=0,1,2,2e,3,4,flex) and ODUCn_TT_Sk
ODUT_TT_Sk - Including ODUkT_TT_Sk and ODUCnT_TT_Sk