SIM RC SECTION

Contents

NOTICE: Unless otherwise stated, "firmware version" in this section indicates DKCMAIN firmware.

1. Reference Code

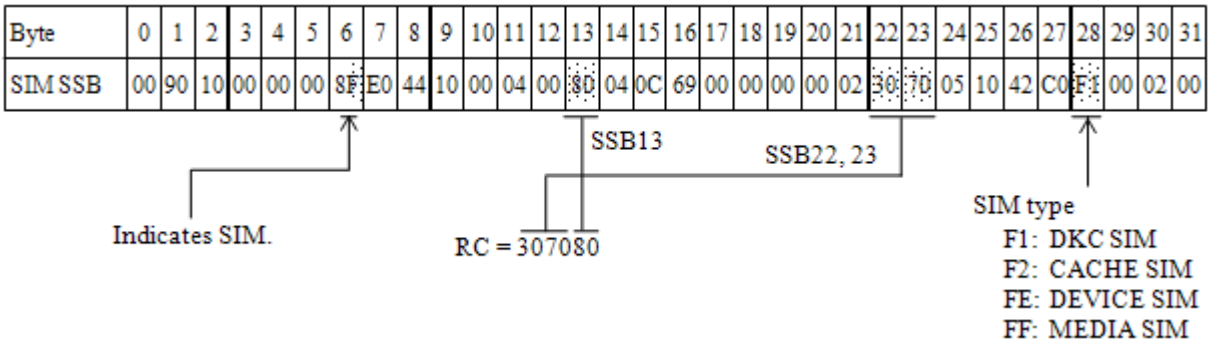
The SIM (System Information Message) is the data to indicate an error or phenomenon in the storage system. You can identify the error and its location by the reference code (RC) of the SIM.
Reference codes (RC) of SIMs can be viewed in the following windows and also be automatically reported by the remote maintenance function.

- "Alerts" tab in the main window of the Maintenance Utility
- "MPC" window

There are the following error levels of SIM reference codes.
If errors occur in multiple parts, see "Maintenance priority flow" (TRBL02-680) to determine the order in which to remove errors from the failure parts regardless of the error levels. If different SIMs for the same part are reported at the same time, first recover the SIM with a smaller "Alert ID". You can view the "Alert ID" in the "Alerts" tab in the main window of the Maintenance Utility.

Error Level	Description
Acute	The operation of the whole storage system is stopped.
Serious	The operation of the failure part is stopped.
Moderate	Partial failure
Service	Minor failure

The SIM data (SIM SSB) is composed of 32 bytes. The reference code (RC) is stored in the SIM data (SIM SSB).
You can view the SIM data (SIM SSB) in the "MPC" window (see MPC05-310). For SIM data (SIM SSB) format, see SIMRC03-10.



2. Reference Codes

SIMs are roughly classified into two types: SIMs detected by the processor and SIMs detected by the GUM.

SIM report specifications are shown below.

1. Time in SIM Log is basically “at the time of generating the phenomenon concerned”.

2. You can refer to SIM Log by clicking the [Alert] tab in the “Maintenance Utility” main window immediately after SIM is created.
   The automatic report of remote maintenance function is also performed at this time.

3. SIM which is reported to GUM is reported to Technical Support Division.

2.1 SIM Reference Codes Detected by the Processor

1. SIM Reference Codes Detected by the Processor

Table 2-1 SIM Reference Codes Detected by the Processor

Error		REF CODE 22,23,13	SIM 28	Level of error	Remarks
Port error	Channel port blocking	2120xx	f1	Moderate	xx: Port# (See (10))
	AL_PA value conflict	2190xx	f1	Service	xx: CHB# + Port# in CHB (See (27))
	Link failure1	2193xx	f1	Serious	xx: CHB# + Port# in CHB (See (27))
	Link failure2 (See (24))	2194xx	f1	Serious	xx: CHB# + Port# in CHB (See (27))
	SFP wrong type	21a8xx	f1	Moderate	xx: CHB# + Port# in CHB (See (27))
	SFP TxFault	21aaxx	f1	Moderate	xx: CHB# + Port# in CHB (See (27))
	External storage system connection path blocking (See (23))	21d0xx	f1	Moderate	xx: CHB# + Port# in CHB (See (27))
	External storage system connection path restore (See (23))	21d1xx	f1	Service	xx: CHB# + Port# in CHB (See (27))
	External storage system path response timeout (See (23))	21d2xx	f1	Service	xx: CHB# + Port# in CHB (See (27))
Processor error	CHK1A threshold over	3070xx	f1	Service	xx: MPU#, MP# in MPU (See (3))
	CHK1B threshold over	3071xx	f1	Service	xx: MPU#, MP# in MPU (See (3))
	CHK3 threshold over	3072xx	f1	Service	xx: MPU#, MP# in MPU (See (3))
	Processor blocking	3073xx	f1	Moderate	xx: MPU#, MP# in MPU (See (3))
	CFM Failure	30750x	f1	Moderate	x: CTL# (See (2))
	Incorrect SUM value of FM	3076xy	f1	Service	x: CTL# (See (2)) y: CFM# (See (8))

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Error		REF CODE 22,23,13	SIM 28	Level of error	Remarks
Processor error	Processor memory temporary error	3077xx	f1	Service	xx: MPU#, MP# in MPU (See (3)) When the system option mode 1097 is set to ON, the WARNING LED does not blink.
	BFM error	30780x	f1	Serious	x: CTL# (See (2))
	WCHK1 dump collected	3080xx	f1	Moderate	xx: MPU#, MP# in MPU (See (3))
	P/S OFF impossible	388f00	f1	Moderate	
	P/S OFF impossible (Device reserved)	389f00	f1	Moderate	
	Undefined Processor is mounted	3990xx	f1	Moderate	xx: MPU#, MP# in MPU (See (3))
	V-R or serial number is inconsistent	3991xx	f1	Moderate	xx: MPU#, MP# in MPU (See (3))
	Replace failed	3993xx	f1	Moderate	xx: MPU#, MP# in MPU (See (3))
	MP patrol check error	39b0xx	f1	Service	xx: MPU#, MP# in MPU (See (3))
	LDEV Blockade (Effect of micro code error)	3a0xyy	f1	Moderate	x: CU# (See (14)) yy: LDEV#
	Backup/restore SM Information failed	6100xx	f1	Moderate	xx = 01: Backup failed 02:Recovery failed
Channel Board/Disk Board error	CHB blocking	2130xx	f1	Moderate	xx: CHB# (See (4))
	DKB blocking	2140xx	f1	Moderate	xx: DKB# (See (5))
	CHB/DKB/CTL Type disagreement	3c9500	f1	Moderate	
	No CHB mounted	3c9600	f1	Moderate	See TROUBLESHOOTING SECTION (TRBL03-1700)
	Acquisition failure of the outside encryption key	661000	f1	Moderate	See TROUBLESHOOTING SECTION (TRBL13-10)
	SAS CTL blocking	cf10xx	f1	Moderate	xx: DKB# (See (5))
	SAS PORT (WideLink) is partially blocked	cf11xx	f1	Service	xx: SAS Port# (See (11))

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Error		REF CODE 22,23,13	SIM 28	Level of error	Remarks
Channel Board/Disk Board error	SAS PORT blocked (See (29))	cf12xx	f1	Moderate	xx: SAS Port# (See (11))
	SAS CTL Error Detection	cf13xx	f1	Serious	xx: DKB# (See (5))
	ENC Temporary Failure Recovery	cf14xx	f1	Service	xx: SAS Port# (See (11))
Controller Board error	CTL blocking	cf880x	f1	Moderate	x: CTL# (See (2))
	CTL blockade due to CTL interconnect path failure	cf8a0x	f1	Moderate	x: CTL# (See (2))
	LANB blocking	ff210x	f1	Moderate	x: LANB# (See (21))
	CTL patrol check error	ffcbxx	f1	Service	xx: CTL# (See (2))
	CFM patrol check error	ffccxy	f2	Moderate	x: CTL# (See (2)) y: CFM# in Cluster (See (8))
	GUM blocking	fff70x	f1	Moderate	xx: CTL# (See (2))
Environmental abnormality	Injustice DC voltage control	399d0x	f1	Moderate	x: CTL# (See (2))
	Injustice CEMODE	399e0x	f1	Moderate	x: CTL# (See (2))
	Injustice CEDT	399f0x	f1	Moderate	x: CTL# (See (2))
	Unjust jumper setting warning	af000x	f1	Moderate	x: CTL# (See (2))
	MP temperature abnormality warning	af100x	f1	Moderate	x: CTL# (See (2)) See THEORY OF OPERATION SECTION (THEORY04-08-30)
	External temperature warning	af110x	f1	Moderate	x: CTL# (See (2)) See THEORY OF OPERATION SECTION (THEORY04-08-30)
	External temperature alarm	af120x	f1	Moderate	x: CTL# (See (2)) See THEORY OF OPERATION SECTION (THEORY04-08-30)
	Thermal monitor warning	af130x	f1	Moderate	x: CTL# (See (2)) See THEORY OF OPERATION SECTION (THEORY04-08-30)
	DKCPSU warning	af200x	f1	Moderate	x: DKCPS# (See (35))
	DKCPS input voltage Abnormality	af210x	f1	Moderate	x: DKCPS# (See (35))
	Environmental microcomputer warning	af300x	f1	Moderate	x: CTL# (See (2))

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Error		REF CODE 22,23,13	SIM 28	Level of error	Remarks
Environmental abnormality	Storage system operation mode warning	af310x	f1	Moderate	x: CTL# (See (2))
	Environment FW update warning	af320x	f1	Moderate	x: CTL# (See (2))
	Abnormal voltage change setting	af330x	f1	Moderate	x: CTL# (See (2))
	BKM/BKMF warning	af400x	f1	Moderate	x: BKM#, BKMF# (See (6))
	Battery replacement should be scheduled	af410x	f1	Moderate	x: Battery# (See (9)) By default, this SIM is generated 90 days before the battery life ends.
	CHBB environmental microcontroller warning	af42xx	f1	Moderate	xx: SWPK# (See (36))
	CHBB environmental firmware update warning	af44xx	f1	Moderate	xx: SWPK# (See (36))
	SWPK temperature warning	af46xx	f1	Moderate	xx: SWPK# (See (36)) See THEORY OF OPERATION SECTION (THEORY04-08-30)
	CHBB voltage change failure warning	af48xx	f1	Moderate	xx: SWPK# (See (36))
	CHBBPS warning	af4a0x	f1	Moderate	x: CHBBPS# (See (37))
	CHBBPS abnormal input voltage	af4b0x	f1	Moderate	x: CHBBPS# (See (37))
	CHBBFAN warning	af4c0x	f1	Moderate	x: CHBBFAN# (See (38))
	Panel switch warning	af4d0x	f1	Moderate	x: CTL# (See (2))
	Invalid PS ON warning	af4e0x	f1	Moderate	x: CTL# (See (2))
	DBPS failed	af50xx	f1	Moderate	xx: DB# (See (13))
	Abnormal DBPS input voltage	af60xx	f1	Moderate	xx: DB# (See (13))
	DB External temperature Warning	af7000	f1	Moderate	See THEORY OF OPERATION SECTION (THEORY04-08-30)
	DB External temperature Alarm	af7100	f1	Moderate	See THEORY OF OPERATION SECTION (THEORY04-08-30)
	ENC failed	af80xx	f1	Moderate	xx: DB# (See (13))

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Error		REF CODE 22,23,13	SIM 28	Level of error	Remarks
Environmental abnormality	CHBB environmental firmware update started	afa0xx	f1	Service	xx: SWPK# (See (36))
	CHBB environmental firmware update is complete	afa1xx	f1	Service	xx: SWPK# (See (36))
	CHBB environmental firmware update was applied	afa2xx	f1	Service	xx: SWPK# (See (36))
	UPS failed	aff00x	f1	Moderate	x: CTL# (See (2))
	GUM warning	aff10x	f1	Moderate	x: CTL# (See (2))
	CFM Error	aff20x	f1	Moderate	x: CFM# (See (8))
	FAN warning	aff30x	f1	Moderate	x: FAN# (See (7))
	PCIe cable connection error	effcxx	f1	Moderate	xx: PECB# (See (39)) See TROUBLESHOOTING SECTION (TRBL03-1480)
	Expander error	effdxx	ff	Moderate	xx: SAS Port# (See (11))
	UNIT connection cable order error	effexx	f1	Moderate	xx: SAS Port# (See (11))
	Part Installation Error	ffd400	f1	Moderate	See TROUBLESHOOTING SECTION (TRBL03-1860)
	Battery warning	fffa0x	f1	Moderate	x: Battery# (See (9))
	Forced volatilization warning	fffe0x	f1	Moderate	x: CTL# (See (2))
Cache error	Pinned slot	ff4xyy	f2	Moderate	x: CU# (See (14)) yy: LDEV#
	Area is volatilized	ffcd0x	f2	Service	x: Cluster# (See (1))
	Data restoration error in the module group	ffcfyx	f2	Service	x: CTL# (See (2)) y: CMG# (See (12))
	Cache correctable error	fff0xx	f2	Service	xx: Failed Part# (See (40))
	Area blocking	fff40x	f2	Serious	x: Cluster# (See (1))
	Both area failed	fff50x	f2	Moderate	x: Cluster# (See (1))
	Replace failed	fff90x	f2	Serious	x: CTL# (See (2))
	Cache Battery is being charged	fe0000	f2	Serious	
	End of Cache Write Through	fe010x	f2	Service	x: 0 = Battery charge waiting complete 1 = Battery cannot be charged
	Start of Cache Write Through	fe020x	f2	Moderate	x: 0 = Battery charge waiting complete 1 = Battery cannot be charged

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Error		REF CODE 22,23,13	SIM 28	Level of error	Remarks
Cache error	CFM type error or CFM shortage	fe030x	f2	Serious	x: CTL# (See (2)) See TROUBLESHOOTING SECTION (TRBL03-2080)
	Mounting Battery shortage	fe040x	f2	Serious	x: CTL# (See (2))
	DIMM Installation mismatch	ffe800	f1	Acute	
	Cache package blockade processing end	ffc30x	f2	Service	x: CTL# (See (2))
Shared memory error	SM area blocking	ffe20x	f1	Serious	x: Cluster# (See (1))
	Replace failed	ffe40x	f1	Serious	x: CTL# (See (2))
	Rebooted with volatilization after an instantaneous down	ffe700	f1	Serious	
	Recovery of area blocked temporarily was completed	ffea0x	f1	Service	x: Cluster# (See (1))
	Area temporary blocking (See (18))	ffee0x	f1	Service	x: Cluster# (See (1))
	Rebooted without volatilization after an instantaneous down	ffef00	f1	Service	
Drive error (normal R/W)	Drive port temporary error (Drive path: Boundary 0)	df6xxx	fe	Service (See (17))	xxx: DB#/RDEV# (See (30))
	Drive port temporary error (Drive path: Boundary 1)	df7xxx	fe	Service (See (17))	xxx: DB#/RDEV# (See (30))
	Drive temporary error	efaxxx	fe	Service (See (17))	xxx: DB#/RDEV# (See (30))
	Drive media error	434xxx	ff	Service (See (17))	xxx: DB#/RDEV# (See (30))
	Drive port blockade (Drive path: Boundary 0)	df8xxx	fe	Moderate (See (17))	xxx: DB#/RDEV# (See (30))
	Drive port blockade (Drive path: Boundary 1)	df9xxx	fe	Moderate (See (17))	xxx: DB#/RDEV# (See (30))
	LDEV blockade (Drive path: Boundary 0/ Effect of Drive port blockade) (See (16))	dfaxxx	fe	Serious	xxx: DB#/RDEV# (See (30))
	LDEV blockade (Drive path: Boundary 1/ Effect of Drive port blockade) (See (16))	dfbxxx	fe	Serious	xxx: DB#/RDEV# (See (30))

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Error		REF CODE 22,23,13	SIM 28	Level of error	Remarks
Drive error (normal R/W)	Abnormal drive Link rate (Drive path: Boundary 0)	dfcxxx	fe	Serious	xxx: DB#/RDEV# (See (30))
	Abnormal drive Link rate (Drive path: Boundary 1)	dfdxxx	fe	Serious	xxx: DB#/RDEV# (See (30))
	Response late Drive	dffxxx	fe	Service	xxx: DB#/RDEV# (See (30))
	Drive blockade (drive) (with redundancy)	ef0xxx	fe	Serious	xxx: DB#/RDEV# (See (30))
	Drive blockade (drive) (without redundancy)	ef1xxx	fe	Serious	xxx: DB#/RDEV# (See (30))
	Drive blockade(Effect of Drive Copy normal end)	ef2xxx	fe	Service	xxx: DB#/RDEV# (See (30))
	Pinned slot creation	ef4xyy	fe	Moderate	x: CU# (See (14)) yy: LDEV#
	LDEV blockade (Effect of drive blockade) (See (16))	ef9xxx	fe	Serious	xxx: DB#/RDEV# (See (30))
	Correction access occurrence	efcxxx	fe	Serious	xxx: DB#/RDEV# (See (30))
	Reboot suspension by the excessive write pending data	efexxx	fe	Service	xxx: DB#/RDEV# (See (30)) (Microprogram replacement Drive)
	Drive blockade (media) (with redundancy)	43bxxx	ff	Serious	xxx: DB#/RDEV# (See (30))
	Drive blockade (media) (without redundancy)	43cxxx	ff	Serious	xxx: DB#/RDEV# (See (30))
	Correction copy start (See (19))	451xxx	fe	Service	xxx: DB#/RDEV# (See (30))
	Correction copy normal end (See (19))	452xxx	fe	Service	xxx: DB#/RDEV# (See (30)) (Copy Source drive) When the system option mode 1097 is set to ON, the WARNING LED does not blink.
	Correction copy abnormal end (See (19))	453xxx	fe	Serious	xxx: DB#/RDEV# (See (30)) (Copy Source drive)

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Error		REF CODE 22,23,13	SIM 28	Level of error	Remarks
Drive error (normal R/W)	Correction copy discontinued (See (19))	454xxx	fe	Service	xxx: DB#/RDEV# (See (30)) (Copy Source drive)
	Correction copy warning end (See (19)) (With blockade LDEV or some error)	455xxx	fe	Service	xxx: DB#/RDEV# (See (30)) (Copy Source drive)
	Dynamic sparing start (See (19)) (Drive copy)	461xxx	fe	Service	xxx: DB#/RDEV# (See (30)) (Copy Source drive)
	Dynamic sparing normal end (Drive copy) (See (19))	462xxx	fe	Service	xxx: DB#/RDEV# (See (30)) (Copy Source drive) When the system option mode 1097 is set to ON, the WARNING LED does not blink.
	Dynamic sparing abnormal end (Drive copy) (See (19))	463xxx	fe	Moderate	xxx: DB#/RDEV# (See (30)) (Copy Source drive)
	Dynamic sparing discontinued (Drive copy)(See (19))	464xxx	fe	Service	xxx: DB#/RDEV# (See (30)) (Copy Source drive)
	Dynamic sparing warning end (With blockade LDEV or some error) (Drive copy) (See (19))	465xxx	fe	Service	xxx: DB#/RDEV# (See (30)) (Copy Source drive)
	Collection Copy/Copyback disabled(drive replace) (See (34))	468xxx	fe	Moderate	xxx: DB#/RDEV# (See (30)) (Copy Source drive)
	Flash module drive initialization failed	4c4xxx	fe	Moderate	xxx: DB#/RDEV# (See (30)) See TROUBLESHOOTING SECTION (TRBL03-1880)
Drive error (ORM)	Drive temporary error	501xxx	fe	Service	xxx: DB#/RDEV# (See (30)) (Copy Source drive)
	Drive media error	502xxx	fe	Service	xxx: DB#/RDEV# (See (30)) (Copy Source drive)

(To be continued)

(Continued from preceding sheet)

Error		REF CODE 22,23,13	SIM 28	Level of error	Remarks
Recommend drive replacement	Flash drive End of life	50bxxx	fe	Service	xxx: DB#/RDEV# (See (30))
	Flash module drive End of life	50cxxx	fe	Service	xxx: DB#/RDEV# (See (30))
Flash module drive error	Flash module drive firmware version warning	50f000	fe	Moderate	
Channel Board Box error	PECB blocking	2153xx	f1	Moderate	xx:PECB# (See (39))
	SWPK blocking	2154xx	f1	Moderate	xx:SWPK# (See (36))
	PECB warning	2157xx	f1	Moderate	xx:PECB# (See (39))
Expander microprogram replacement	Expander microprogram replacement failure	4a80xx	f1	Moderate	xx: DB# (See (13))
PDEV Erase	PDEV Erase Start	4c1xxx	fe	Servece	xxx: DB#/RDEV# (See (30))
	PDEV Erase Normal End	4c2xxx	fe	Service	xxx: DB#/RDEV# (See (30))
	PDEV Erase Abnormal End	4c3xxx	fe	Service	xxx: DB#/RDEV# (See (30))
External device error	External storage system connection device blockade (See (22))	efd000	fe	Serious	
	Abnormal end of Write processing in External storage system	ef5xyy	fe	Moderate	x: CU# (See (14)) yy: LDEV#
	Abnormal end of Read processing in External storage system	ff5xyy	fe	Moderate	x: CU# (See (14)) yy: LDEV#
Cache Condition	Cache overload condition	491000	f1	Service	(See (15))

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Error		REF CODE 22,23,13	SIM 28	Level of error	Remarks
Format	Format complete	4100xx	f1	Service	xx = 00: Normal end 01: Abnormal end 02: Partial abnormal end (See (41)) When the system option mode 1097 is set to ON, the WARNING LED does not blink.
	Quick Format finish	410100	f1	Service	When the system option mode 1097 is set to ON, the WARNING LED does not blink.
Audit Log	Audit Log lost	180000	f1	Moderate	See TROUBLESHOOTING SECTION (TRBL03-1940)
SSB Log	Detected a specific error code SSB	1c0000	f1	Service	
Power error	DB power off	ac50xx	f1	Moderate	xx: DB# (See (13))
	DB power recovered (See (28))	ac51xx	f1	Service	xx: DB# (See (13))
	Controller Chassis was set to power errormode	ac6000	f1	Moderate	
	DKC was released from power error mode	ac6100	f1	Service	
	When Controller Chassis was set to power error mode, Urgent Destaging start succeeded	ac6200	f1	Service	
	When Controller Chassis was set to power error mode, Urgent Destaging start failed	ac6300	f1	Moderate	
	Server failure	ac8001	f1	Serious	
Long Life support indicator	The upper temperature limit was exceeded	39a000	f1	Service	

(To be continued)

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Error		REF CODE 22,23,13	SIM 28	Level of error	Remarks
License key failure	License key has expired	7ff7xx	f1	Moderate	See TROUBLESHOOTING SECTION (TRBL03-1330) (See (33))
	Allowed capacity was exceeded	7ff8xx	f1	Moderate	See TROUBLESHOOTING SECTION (TRBL03-1340) (See (33))
	Program Product was invalidated due to expiration of premise Program Product	7ff9xx	f1	Moderate	See TROUBLESHOOTING SECTION (TRBL03-1350) (See (33))
CUDG error	CUDG detected error	760000	f1	Moderate	

Table 2-2 SIM Reference Codes Detected by the Processor for TrueCopy

Error		REF CODE 22,23,13	SIM 28	Level of error	Remarks
Pair volume status error	TC started the initialcopy or out of sync for this volume	d00xyy	fe	Service	x: CU# (See (14)) yy: LDEV#
	TC completed the initial copy for this volume	d01xyy	fe	Service	x: CU# (See (14)) yy: LDEV#
	TC for this volume was deleted	d02xyy	fe	Service	x: CU# (See (14)) yy: LDEV#
	Status of the R-VOL is changed	d1zxyy	fe	Service	x: CU# (See (14))yy: LDEV# z: (See (20))
	TC for this volume was suspended (Due to an unrecoverable failure on the remote copy connections)	d40xyy	fe	Serious	x: CU# (See (14)) yy: LDEV#
	TC for this volume was suspended (Due to an unrecoverable failure on the M-VOL or the remote copy connections)	d41xyy	fe	Serious	x: CU# (See (14)) yy: LDEV#
	TC for this volume was suspended (Due to an unrecoverable failure on the R-VOL)	d42xyy	fe	Serious	x: CU# (See (14)) yy: LDEV#
	TC for this volume was suspended (Due to an internal error condition detected by the RCU)	d44xyy	fe	Serious	x: CU# (See (14)) yy: LDEV#
	TC for this volume was suspended (Caused by Delete pair operation was issued to the R-VOL)	d45xyy	fe	Serious	x: CU# (See (14)) yy: LDEV#
	The R-VOL has suspended (Due to an unrecoverable failure on the remote copy connections)	d46xyy	fe	Serious	x: CU# (See (14)) yy: LDEV#
	The R-VOL has suspended (Due to an unrecoverable failure on the R-VOL)	d47xyy	fe	Serious	x: CU# (See (14)) yy: LDEV#
	Status of the M-VOL was not consistent with the R-VOL	d4fxyy	fe	Serious	x: CU# (See (14)) yy: LDEV#

Table 2-3 SIM Reference Codes Detected by the Processor for TrueCopy/UR/Global-active Device

Error		REF CODE 22,23,13	SIM 28	Level of error	Remarks
FCP error (Remote Control Port)	Logical path(s) on the remote copy connections was logically blocked (Due to an error conditions) (See (22))	2180xx	f1	Moderate	xx: CHB# + Port# in CHB (See (27))

Table 2-4 SIM Reference Codes Detected by the Processor for TrueCopy/UR/GAD/ ShadowImage/VM

Error		REF CODE 22,23,13	SIM 28	Level of error	Remarks
Differential area error	Differential area blocking (*1)	4d1xyy	fe	Serious	x: CU# (See (14)) yy: LDEV#

*1: When resynchronizing the pair next time, all the data of the primary volume is copied to the secondary volume by the track.

Table 2-5 SIM Reference Codes Detected by the Processor for ShadowImage/ Volume Migration/Thin Image

Error		REF CODE 22,23,13	SIM 28	Level of error	Remarks
ShadowImage error	ShadowImage Copy abnormal end	47dxyy	fe	Moderate	x: CU# (See (14)) yy: LDEV# (secondary volume)
	Forcible suspend by SM volatile	47e700	fe	Moderate	
Volume Migration error	Volume Migration abnormal end	47fxyy	fe	Moderate	x: CU# (See (14)) yy: LDEV# (target volume)
Thin Image error	Forcible suspend by SM volatile	47ec00	f1	Moderate	
	Thin Image Option abnormal end	4b3xxx	fe	Moderate	x: CU# (See (14)) xx: LDEV#
	Warning for depletion of cache management devices	670000	fe	Moderate	No service report
Pair Failure SIM Reduce	SI	7ff102	f1	Service	• No user notice (SNMP, e-mail, syslog) (See (32)) • No WARNING LED blinking (See (32))
	TI	7ff104	f1	Service	• No user notice (SNMP, e-mail, syslog) (See (32)) • No WARNING LED blinking (See (32))
	Volume Migration	7ff106	f1	Service	• No user report (SNMP, e-mail, syslog) (See (32)) • No WARNING LED blinking (See (32))

Table 2-6 SIM Reference Codes Detected by the Processor for Thin Image Pool

Error		REF CODE 22,23,13	SIM 28	Level of error	Remarks
Thin Image Pool error	Pool blocking	602xxx	f1	Moderate	xxx: Pool# xxx: ffe: Pools blocking by Shared Memory volatile Due to expectation of user's maintenance operation • No service report (See (31))
	Shared Memory Space Warning	603000	f1	Moderate	Due to expectation of user's maintenance operation • No service report (See (31))
	Exceeded Threshold of actual pool use rate	604xxx	f1	Moderate	xxx: Pool# Due to expectation of user's maintenance operation • No service report (See (31))
	Actual pool use rate reaches upper limit	605xxx	f1	Moderate	xxx: Pool#
	Exceeded Fixed outage Threshold of pool use rate	606xxx	f1	Moderate	xxx: Pool# Due to expectation of user's maintenance operation • No service report (See (31))
	Shared Memory Full	624000	f1	Moderate	

Table 2-7 SIM Reference Codes Detected by the Processor for Dynamic Provisioning

Error		REF CODE 22,23,13	SIM 28	Level of error	Remarks
Dynamic Provisioning Pool error	DP Pool error is detected	623xxx	f1	Moderate	xxx: Pool# xxx = ffe: DP Pools blocking by Shared Memory volatile
	Shared Memory Full (DP)	624000	f1	Moderate	
	DP Pool LDEV blockade	627xxx	f1	Moderate	xxx: Pool#
	DP Protect attribute setting of Data Retention Utility	628000	f1	Service	
	Exceeded Warning Threshold of DP Pool use rate	629xxx	f1	Moderate	xxx: Pool# Due to expectation of user's maintenance operation • No service report
	Actual DP Pool use rate reaches upper limit	62axxx	f1	Moderate	xxx: Pool# Due to expectation of user's maintenance operation • No service report
	Threshold of DP Pool use rate remains exceeded	62b000	f1	Moderate	Due to expectation of user's maintenance operation • No service report (See (32))
	Exceeded Depletion Threshold of DP Pool use rate	62cxxx	f1	Moderate	xxx: Pool# Due to expectation of user's maintenance operation • No service report

(To be continued)

(Continued from preceding sheet)

Error		REF CODE 22,23,13	SIM 28	Level of error	Remarks
Dynamic Provisioning Pool error	Exceeded Fixed outage Threshold of DPPool use rate	62dxxx	f1	Moderate	xxx: Pool# Due to expectation of user's maintenance operation • No service report
	TI pair DP pool exceeded depletion threshold	62exxx	f1	Moderate	xxx: Pool# Due to expectation of user's maintenance operation • No service report
	Auto pool expansion failed due to system error	631xxx	f1	Moderate	xxx: Error cause code (See (43)) Due to expectation of user's maintenance operation • No service report
	Auto pool expansion failed due to pool error	632xxx	f1	Moderate	xxx: Pool#
	Failed to create, expand, or delete pools	633xxx	f1	Moderate	xxx: Pool#
	Auto pool expansion failed due to no more LDEV IDs	634xxx	f1	Moderate	xxx: Pool# Due to expectation of user's maintenance operation • No service report
Dynamic Tiering Pool error	Tier relocation is not complete	641xxx	f1	Service	xxx: Pool# Due to expectation of user's maintenance operation • No service report (See (42))
Encryption	No free encryption key	660100	f1	Moderate	see TROUBLESHOOTING SECTION (TRBL13-20)
	Remaining free encryption key warning	660200	f1	Service	see TROUBLESHOOTING SECTION (TRBL13-20)
	Acquisition of encryption key from KMS failed	6610xx	f1	Moderate	xx = 00: Key Encryption Key 01: Encryption Key see TROUBLESHOOTING SECTION (TRBL13-10)

Table 2-8 List of Reference Codes of SIMs Detected by UR Processor

Error		REF CODE 22,23,13	SIM 28	Level of error	Remarks
Pair volume failure	A volume to be used by the UR was defined	d80xyy	fe	Service	x: CU# (See (14)) yy: LDEV#
	The volume being used by the UR began a copying	d81xyy	fe	Service	x: CU# (See (14)) yy: LDEV#
	The volume being used by the UR completed a copying	d82xyy	fe	Service	x: CU# (See (14)) yy: LDEV#
	The volume being used by the UR received a request for suspension	d83xyy	fe	Service	x: CU# (See (14)) yy: LDEV#
	The volume being used by the UR completed a suspension transaction	d84xyy	fe	Service	x: CU# (See (14)) yy: LDEV#
	The volume being used by the UR received a request for deletion	d85xyy	fe	Service	x: CU# (See (14)) yy: LDEV#
	The volume being used by the UR completed the deletion	d86xyy	fe	Service	x: CU# (See (14)) yy: LDEV#
	The volume being used by the UR was defined (placed in the PSUS status immediately)	d87xyy	fe	Service	x: CU# (See (14)) yy: LDEV#
	A Delta volume to be used by the URMF/UR was defined	d88xyy	fe	Service	x: CU# (See (14)) yy: LDEV#
	A Delta volume to be used by the URMF/UR was redefine	d89xyy	fe	Service	x: CU# (See (14)) yy: LDEV#
	A change to an S-VOL was received from the MCU	d9zxyy	fe	Service	x: CU# (See (14)) yy: LDEV# z: (See (25))
	A change to an S-VOL was received from the RCU	dazxyy	fe	Service	x: CU# (See(14)) yy: LDEV# z: (See (26))
	A volume being used by a P-VOL was suspended (Path recovery was impossible)	dc0xyy	fe	Serious	x: CU# (See (14)) yy: LDEV#
	A volume being used by a P-VOL was suspended (A failure on the MCU side was detected)	dc1xyy	fe	Serious	x: CU# (See (14)) yy: LDEV#

(To be continued)

(Continued from preceding sheet)

Error		REF CODE 22,23,13	SIM 28	Level of error	Remarks
Pair volume failure	A volume being used by a P-VOL was suspended (Suspension of an S-VOL failure was detected)	dc2xyy	fe	Serious	x: CU# (See (14)) yy: LDEV#
	A volume being used by a P-VOL was suspended (Suspension of an S-VOL was detected)	dc4xyy	fe	Serious	x: CU# (See (14)) yy: LDEV#
	A volume being used by a P-VOL was suspended (Deletion of an S-VOL pair was detected)	dc5xyy	fe	Serious	x: CU# (See (14)) yy: LDEV#
	A volume being used by an S-VOL was suspended (Path recovery was impossible)	dc6xyy	fe	Serious	x: CU# (See (14)) yy: LDEV#
	A volume being used by an S-VOL was suspended (A failure on the RCU side was detected)	dc7xyy	fe	Serious	x: CU# (See (14)) yy: LDEV#
	A volume being used by an S-VOL was suspended (P/S OFF on the MCU side was detected)	dc8xyy	fe	Service	x: CU# (See (14)) yy: LDEV#
	A Delta volume being used by a P-VOL was suspended	dc9xyy	fe	Service	x: CU# (See (14)) yy: LDEV#
	Pair suspend (Spread by error of another Affiliate)	dcaxyy	fe	Serious	x: CU# (See (14)) yy: LDEV#
	UR M-JNL Meta FULL WARNING	dce0xx	fe	Moderate	xx: JNLG#
	UR M-JNL Data FULL WARNING	dce1xx	fe	Moderate	xx: JNLG#
	UR R-JNL Meta FULL WARNING	dce2xx	fe	Moderate	xx: JNLG#
	UR R-JNL Data FULL WARNING	dce3xx	fe	Moderate	xx: JNLG#
	The UR Read JNL was interrupted for one minute (A failure on the MCU side was detected)	dcf0xx	fe	Moderate	xx: JNLG#

(To be continued)

(Continued from preceding sheet)

Error		REF CODE 22,23,13	SIM 28	Level of error	Remarks
Pair volume failure	The UR Read JNL was interrupted for five minutes (A failure on the MCU side was detected)	dcf1xx	fe	Serious	xx: JNLG#
	The UR Read JNL was interrupted for one minute (A failure on the RCU side was detected)	dcf2xx	fe	Moderate	xx: JNLG#
	The UR Read JNL was interrupted for five minutes (A failure on the RCU side was detected)	dcf3xx	fe	Serious	xx: JNLG#

Table 2-9 List of Reference Codes of SIMs Detected by GAD Processor

Error		REF CODE 22,23,13	SIM 28	Level of error	Remarks
Pair volume failure	A volume being used by a GAD was suspended (Due to an unrecoverable failure on the remote copy connections)	dd0xyy	fe	Serious	x: CU# (14) yy: LDEV#
	A volume being used by a GAD was suspended (volume failure)	dd1xyy	fe	Serious	x: CU# (14) yy: LDEV#
	A volume being used by a GAD was suspended (Internal error failure)	dd2xyy	fe	Serious	x: CU# (14) yy: LDEV#
	In GAD, the P-VOL status was not consistent with the S-VOL status	dd3xyy	fe	Serious	x: CU# (14) yy: LDEV#

Table 2-10 List of Reference Codes of SIMs Detected by Processor

Error		REF CODE 22,23,13	SIM 28	Level of error	Remarks
Quorum Disk error	Quorum Disk Restore	dee0xx	fe	Service	xx: Quorum Disk ID
	Quorum Disk Blocked	def0xx	fe	Serious	xx: Quorum Disk ID

Table 2-11 SIM Reference Codes Detected by the Processor for dedupe and compression

Error		REF CODE 22,23,13	SIM 28	Level of error	Remarks
dedupe and compression failure	dedupe and compression operation error detection	6800xx	f1	Moderate	xx: Error code 01: dedupe and compression operation error 02: deleting DP-VOLs with capacity saving enabled (without blocking or formatting operation) error detection
	Operation error of deduplication system data volume automatic deletion was detected.	681xxx	f1	Moderate	xxx: Pool#
	Deduplication system data volume automatic deletion was suspended.	682000	f1	Moderate	

Table 2-12 SIM Reference Codes Detected by the HSAE Server Processor

Error		REF CODE 22,23,13	SIM 28	Level of error	Remarks
HSAE server failure	Failure in a server registered by HSAE	7c1xxx	f1	Moderate	xxx: HSAE server ID Due to expectation of user's maintenance operation • No service report However, if inquired by a user, collect dumps (see MAINTENANCE PC SECTION "5.2 Dump"), then contact the Technical Support Division.

2. Location Description and Supplementary Note

(1) Cluster#

See the table below.

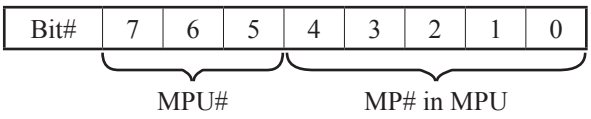
Cluster	Controller Board Location	Cluster# (HEX)	CTL# (HEX)
Cluster-1	CTL1	x‘0’	x‘0’
Cluster-2	CTL2	x‘1’	x‘1’

(2) CTL#

See the table of (1).

(3) MPU#, MP# in MPU

The upper 3 bits indicate the MPU#.
The MPU# '000' is the MP Unit ID "MPU-10" and the MPU# '001' is the MP Unit ID "MPU-20".
The lower 5 bits indicate the MP# in the MPU.



Example : x'2F' (bit string : 00101111) indicates MPU-20 and MP20-0F.

Cluster	MP Unit ID	MP Location	MPU#, MP# in MPU (HEX)
Cluster-1	MPU-10	MP10-00	x'00'
		MP10-01	x'01'
		MP10-02	x'02'
		MP10-03	x'03'
		MP10-04	x'04'
		MP10-05	x'05'
		MP10-06	x'06'
		MP10-07	x'07'
		MP10-08	x'08'
		MP10-09	x'09'
		MP10-0A	x'0A'
		MP10-0B	x'0B'
		MP10-0C	x'0C'
		MP10-0D	x'0D'
		MP10-0E	x'0E'
		MP10-0F	x'0F'
		MP10-10	x'10'
		MP10-11	x'11'
		MP10-12	x'12'
		MP10-13	x'13'
Cluster-2	MPU-20	MP20-00	x'20'
		MP20-01	x'21'
		MP20-02	x'22'
		MP20-03	x'23'
		MP20-04	x'24'
		MP20-05	x'25'
		MP20-06	x'26'
		MP20-07	x'27'
		MP20-08	x'28'
		MP20-09	x'29'
		MP20-0A	x'2A'
		MP20-0B	x'2B'
		MP20-0C	x'2C'
		MP20-0D	x'2D'
		MP20-0E	x'2E'
		MP20-0F	x'2F'
		MP20-10	x'30'
		MP20-11	x'31'
		MP20-12	x'32'
		MP20-13	x'33'

(4) CHB#

Channel Board consecutive numbers in the device. See the table below show relations with the Channel Board Location.

Cluster	Channel Board Location	VSP G130 CHB# (HEX)	VSP G350, F350 CHB# (HEX)	VSP G370, F370 VSP G700, F700 VSP G900, F900 CHB# (HEX)
Cluster-1	CHB-1A	x'00'	x'00'	x'00'
	CHB-1B	—	x'01'	x'01'
	CHB-1C	—	—	x'02'
	CHB-1D	—	—	x'03'
	CHB-1E	—	—	x'04'
	CHB-1F	—	—	x'05'
	CHB-1G	—	—	x'06'
	CHB-1H	—	—	x'07'
	CHB-1J	—	—	x'08'
	CHB-1K	—	—	x'09'
	CHB-1L	—	—	x'0A'
	CHB-1M	—	—	x'0B'
Cluster-2	CHB-2A	x'01'	x'02'	x'10'
	CHB-2B	—	x'03'	x'11'
	CHB-2C	—	—	x'12'
	CHB-2D	—	—	x'13'
	CHB-2E	—	—	x'14'
	CHB-2F	—	—	x'15'
	CHB-2G	—	—	x'16'
	CHB-2H	—	—	x'17'
	CHB-2J	—	—	x'18'
	CHB-2K	—	—	x'19'
	CHB-2L	—	—	x'1A'
	CHB-2M	—	—	x'1B'

(5) DKB#

Disk Board consecutive numbers in the device. See the table below show relations with the Disk Board Location.

Cluster	Disk Board Location	VSP G130 VSP G350, F350 VSP G370, F370 DKB# (HEX)	VSP G700, F700 VSP G900, F900 DKB# (HEX)
Cluster-1	DKB-1C	x'00'	—
	DKB-1E	—	x'02'
	DKB-1F	—	x'03'
	DKB-1G	—	x'00'
	DKB-1H	—	x'01'
Cluster-2	DKB-2C	x'04'	—
	DKB-2E	—	x'06'
	DKB-2F	—	x'07'
	DKB-2G	—	x'04'
	DKB-2H	—	x'05'

NOTE: In the case of VSP G130, VSP G350, VSP F350, VSP G370 and VSP F370, the Disk Board (DKB) is included in the Controller board.

(6) BKM#, BKMF#

The following table shows the numbers of BKM/BKMF in the storage system.

Cluster	VSP G130 VSP G350, F350 VSP G370, F370 BKM Location	VSP G130 VSP G350, F350 VSP G370, F370 BKM# (HEX)
Cluster-1	BKM-1	x'0'
Cluster-2	BKM-2	x'4'

Cluster	VSP G700, F700 VSP G900, F900 BKMF Location	VSP G700, F700 VSP G900, F900 BKMF# (HEX)
Cluster-1	BKMF-10	x'0'
	BKMF-11	x'1'
	BKMF-12	x'2'
	BKMF-13	x'3'
Cluster-2	BKMF-20	x'4'
	BKMF-21	x'5'
	BKMF-22	x'6'
	BKMF-23	x'7'

(7) FAN#

The following table shows the numbers of FANs in the storage system.

Cluster	VSP G130 VSP G350, F350 VSP G370, F370 FAN Location	VSP G130 VSP G350, F350 VSP G370, F370 FAN# (HEX)
Cluster-1	FAN-10	x‘0’
	FAN-11	x‘1’
Cluster-2	FAN-20	x‘4’
	FAN-21	x‘5’

Cluster	VSP G700, F700 VSP G900, F900 BKMF Location	VSP G700, F700 VSP G900, F900 FAN (HEX)
Cluster-1	BKMF-10	x‘0’
	BKMF-11	x‘1’
	BKMF-12	x‘2’
	BKMF-13	x‘3’
Cluster-2	BKMF-20	x‘4’
	BKMF-21	x‘5’
	BKMF-22	x‘6’
	BKMF-23	x‘7’

(8) CFM#, CFM# in Cluster

The following table shows the numbers of Cache Flash Memories.

Cluster	VSP G130 VSP G350, F350 VSP G370, F370 Cache Flash Memory Location	VSP G130 VSP G350, F350 VSP G370, F370 CFM# (HEX)	VSP G130 VSP G350, F350 VSP G370, F370 CFM# in Cluster (HEX)
Cluster-1	CFM-1	x‘0’	x‘0’
Cluster-2	CFM-2	x‘2’	x‘0’

Cluster	VSP G700, F700 VSP G900, F900 Cache Flash Memory Location	VSP G700, F700 VSP G900, F900 CFM# (HEX)	VSP G700, F700 VSP G900, F900 CFM# in Cluster (HEX)
Cluster-1	CFM-10	x‘0’	x‘0’
	CFM-11	x‘1’	x‘1’
Cluster-2	CFM-20	x‘2’	x‘0’
	CFM-21	x‘3’	x‘1’

(9) Battery#

The following table shows the numbers of Battery.

Cluster	VSP G130 VSP G350, F350 VSP G370, F370 Battery Location	VSP G130 VSP G350, F350 VSP G370, F370 Battery# (HEX)
Cluster-1	BAT-1	x‘0’
Cluster-2	BAT-2	x‘7’

Cluster	VSP G700, F700 VSP G900, F900 Battery Location	VSP G700, F700 VSP G900, F900 Battery# (HEX)
Cluster-1	BAT-B11	x‘1’
	BAT-B12	x‘3’
	BAT-B13	x‘5’
Cluster-2	BAT-B21	x‘8’
	BAT-B22	x‘a’
	BAT-B23	x‘c’

(10) Port#

Channel port consecutive numbers in the device. Port of 4 at the maximum is implemented in each Channel Board. See the table below show relations with the Channel Board Location.

Cluster	Channel Board Location	Port Name	VSP G130 Port# (HEX)	VSP G350, F350 Port# (HEX)	VSP G370, F370 VSP G700, F700 VSP G900, F900 Port# (HEX)
Cluster-1	CHB-1A	1A, 3A, 5A, 7A	x'00' to x'03'	x'00' to x'03'	x'00' to x'03'
	CHB-1B	1B, 3B, 5B, 7B	—	x'04' to x'07'	x'04' to x'07'
	CHB-1C	1C, 3C, 5C, 7C	—	—	x'08' to x'0B'
	CHB-1D	1D, 3D, 5D, 7D	—	—	x'0C' to x'0F'
	CHB-1E	1E, 3E, 5E, 7E	—	—	x'10' to x'13'
	CHB-1F	1F, 3F, 5F, 7F	—	—	x'14' to x'17'
	CHB-1G	1G, 3G, 5G, 7G	—	—	x'18' to x'1B'
	CHB-1H	1H, 3H, 5H, 7H	—	—	x'1C' to x'1F'
	CHB-1J	1J, 3J, 5J, 7J	—	—	x'20' to x'23'
	CHB-1K	1K, 3K, 5K, 7K	—	—	x'24' to x'27'
	CHB-1L	1L, 3L, 5L, 7L	—	—	x'28' to x'2B'
	CHB-1M	1M, 3M, 5M, 7M	—	—	x'2C' to x'2F'
Cluster-2	CHB-2A	2A, 4A, 6A, 8A	x'04' to x'07'	x'08' to x'0B'	x'40' to x'43'
	CHB-2B	2B, 4B, 6B, 8B	—	x'0C' to x'0F'	x'44' to x'47'
	CHB-2C	2C, 4C, 6C, 8C	—	—	x'48' to x'4B'
	CHB-2D	2D, 4D, 6D, 8D	—	—	x'4C' to x'4F'
	CHB-2E	2E, 4E, 6E, 8E	—	—	x'50' to x'53'
	CHB-2F	2F, 4F, 6F, 8F	—	—	x'54' to x'57'
	CHB-2G	2G, 4G, 6G, 8G	—	—	x'58' to x'5B'
	CHB-2H	2H, 4H, 6H, 8H	—	—	x'5C' to x'5F'
	CHB-2J	2J, 4J, 6J, 8J	—	—	x'60' to x'63'
	CHB-2K	2K, 4K, 6K, 8K	—	—	x'64' to x'67'
	CHB-2L	2L, 4L, 6L, 8L	—	—	x'68' to x'6B'
	CHB-2M	2M, 4M, 6M, 8M	—	—	x'6C' to x'6F'

(11) SAS Port#

SAS Port consecutive numbers.

See the table below show relations with the Disk Board Location.

Cluster	Disk Board Location	SAS Port Location	VSP G130 VSP G350, F350 VSP G370, F370 SAS Port# (HEX)	VSP G700, F700 VSP G900, F900 SAS Port# (HEX)
Cluster-1	DKB-1C	1C-0	x'00'	—
		1C-1	x'01'	—
	DKB-1E	1E-0	—	x'04'
		1E-1	—	x'05'
	DKB-1F	1F-0	—	x'06'
		1F-1	—	x'07'
	DKB-1G	1G-0	—	x'00'
		1G-1	—	x'01'
	DKB-1H	1H-0	—	x'02'
		1H-1	—	x'03'
Cluster-2	DKB-2C	2C-0	x'08'	—
		2C-1	x'09'	—
	DKB-2E	2E-0	—	x'0C'
		2E-1	—	x'0D'
	DKB-2F	2F-0	—	x'0E'
		2F-1	—	x'0F'
	DKB-2G	2G-0	—	x'08'
		2G-1	—	x'09'
	DKB-2H	2H-0	—	x'0A'
		2H-1	—	x'0B'

NOTE: In the case of VSP G130, VSP G350, VSP F350, VSP G370 and VSP F370, the Disk Board and the SAS Port are included in the Controller board.

(12) CMG#

DIMM module group numbers in the Controller Board. See the table below show relations with the DIMM Location.

VSP G130 DIMM Location	VSP G350, F350 VSP G370, F370 DIMM Location	VSP G700, F700 VSP G900, F900 DIMM Location	CMG# (HEX)
CM00	CM00 & CM01	CM00 & CM01 & CM02 & CM03	x'00'
—	—	CM10 & CM11 & CM12 & CM13	x'01'

(13) DB#

Drive Box consecutive numbers in the device. See the table below show relations with the Drive Box Location.

DB#	Drive Box Location	DB#	Drive Box Location
DB-00	x‘00’	DB-24	x‘18’
DB-01	x‘01’	DB-25	x‘19’
DB-02	x‘02’	DB-26	x‘1A’
DB-03	x‘03’	DB-27	x‘1B’
DB-04	x‘04’	DB-28	x‘1C’
DB-05	x‘05’	DB-29	x‘1D’
DB-06	x‘06’	DB-30	x‘1E’
DB-07	x‘07’	DB-31	x‘1F’
DB-08	x‘08’	DB-32	x‘20’
DB-09	x‘09’	DB-33	x‘21’
DB-10	x‘0A’	DB-34	x‘22’
DB-11	x‘0B’	DB-35	x‘23’
DB-12	x‘0C’	DB-36	x‘24’
DB-13	x‘0D’	DB-37	x‘25’
DB-14	x‘0E’	DB-38	x‘26’
DB-15	x‘0F’	DB-39	x‘27’
DB-16	x‘10’	DB-40	x‘28’
DB-17	x‘11’	DB-41	x‘29’
DB-18	x‘12’	DB-42	x‘2A’
DB-19	x‘13’	DB-43	x‘2B’
DB-20	x‘14’	DB-44	x‘2C’
DB-21	x‘15’	DB-45	x‘2D’
DB-22	x‘16’	DB-46	x‘2E’
DB-23	x‘17’	DB-47	x‘2F’

(14) CU# is detected only lower figure in SIM-RC (x‘0’ - x‘f’).

For additional information, see [Error Location] of [Content SIM] in “[2] SIM Log” in MAINTENANCE PC SECTION “5.3.1 Log Indication”.

(15) The SIM is output once an hour while the error remains. (Once the SIM is output, it is not output until one hour has passed since then.)
Select “Detail” for Type to run Auto Dump, and then contact the Technical Support Division.

(16) Recover LDEVs according to the procedure shown in TROUBLESHOOTING SECTION “3.13 Recovery Procedure for LDEV Blockade (SIM = ef9xxx, dfaxxx, dfbxxx)”.

(17) In the case that there are no redundancy of drive the level of error is “Serious”.

(18) This temporary blocking is to recover the logical table on Shared Memory and be automatically recovered.

(19) Recover the error according to the procedure shown in TROUBLESHOOTING SECTION “3.27 Drive failure recovery procedure”.

(20) Numbers of pair status changes
x‘0’: From SMPL to COPY
x‘1’: From SMPL to PAIR
x‘2’: From COPY to PAIR
x‘3’: From COPY to PSUS/PSUE
x‘4’: From PAIR to PSUS/PSUE
x‘5’: From PAIR to SMPL
x‘6’: From COPY to SMPL
x‘7’: From PSUS/PSUE to SMPL
x‘8’: From PSUS/PSUE to COPY
x‘9’: From COPY to PSUS/PSUE (continue)
x‘a’: From COPY to PSUS/PSUE (complete)
x‘b’: From PSUS/PSUE (continue) to PSUS/PSUE

(21) LANB#

The following table shows the numbers of LAN Boards.

Cluster	LAN Boards Location	LANB# (HEX)
Cluster-1	LAN-1	x'00'
Cluster-2	LAN-2	x'01'

NOTE: In the case of VSP G130, VSP G350, VSP F350, VSP G370 and VSP F370, the LAN Board is included in the Controller board.

(22) In the fibre channel connection of the TrueCopy, this SIM may be issued on the MCU side when update the Firmware of RCU.

(23) The following information is valid when SIM = 21d0xx, 21d1xx, 21d2xx, efd000 is reported.

	0	1	2	3	4	5	6	7
byte 0x40 byte 0x41	Not used							
byte 0x42 byte 0x43	LDEV number(lower 2 bytes)							
byte 0x44 to byte 0x47	VDEV number							
byte 0x48 to byte 0x4F	Forehand WWN of External Storage connection							
byte 0x50 to byte 0x59	Product Number of External Storage							
byte 0x5A to byte 0x61	Vendor Name							
byte 0x62 to byte 0x71	Model name of External Storage							
byte 0x72 byte 0x73	External LUN#							
byte 0x74	Bit determining whether info identifying Binary/ Bit determining whether info identifying	Info identifying Binary/ASCII for the connected storage system serial number	Not used					
byte 0x75 to byte 0x78	LDEV number							
byte 0x79 to byte 0x7F	Not used							

byte 0x74 bit0: Bit determining whether the information identifying Binary/ASCII for the connected storage system serial number is valid

Bit	Description
ON (1b)	Information identifying whether the connected storage system serial number is in the Binary/ASCII format is “Valid”.
OFF (0b)	Information identifying whether the connected storage system serial number is in the Binary/ASCII format is “Invalid”.

byte 0x74 bit1: Information identifying Binary/ASCII for the connected storage system serial number

Bit	Description
ON (1b)	The serial number of the connected storage system is in the Binary format.
OFF (0b)	The serial number of the connected storage system is in the ASCII format.

Serial number is not acquired from external storage, NULL (0) is set in the Serial number of the connected storage system.
Serial number of the connected storage system is stored by left justify in the case of Binary and stored by right justify in the case of ASCII.

SIM = 21d1 occurs when at least one of the external paths recovers.
To confirm that all the paths have recovered at the completion of the maintenance, check the path status not only with the output of SIM = 21d1 but with the following procedure:

(a) Check the status displayed in the [Status] field of the [External Storage] window that is displayed when selecting [External Storage] from the [Storage System] tree in the Storage Navigator window.
(b) Confirm that the status displayed in the [Status] field is “Normal”.

NOTE: If the status displayed in the [Status] field is other than “Normal”, it indicates that at least one or more external paths are in the maintenance status or in the blocked status.

When external storage in the following matrix becomes the target of SIM, information of Model name of External Storage in the SIM is different from that of actual product name. When the external storage in the following matrix is connected and SIM is reported, check Model name of External Storage in the SIM against the actual product name to identify target external storage of the SIM.

SIM/ASSIST			Actual product		
Vendor Name	Model Name of External Storage	Product Number of External Storage (NOTE)	Vendor Name	Product Name	Display in console
HITACHI	9500V	D600xxxx	HITACHI	9570V	9500V
HITACHI	9500V	D60Jxxxx	HITACHI	9530V	9500V
HITACHI	9500V	D60Hxxxx	HITACHI	9580V/9585V	9500V
HITACHI	9500V	71xxxxxx	HITACHI	WMS100	WMS
HITACHI	9500V	73xxxxxx	HITACHI	AMS200	AMS
HITACHI	9500V	75xxxxxx	HITACHI	AMS500	AMS
HITACHI	9500V	77xxxxxx	HITACHI	AMS1000	AMS
HITACHI	AMS	83xxxxxx	HITACHI	AMS2100	AMS
HITACHI	AMS	85xxxxxx	HITACHI	AMS2300	AMS
HITACHI	AMS	87xxxxxx	HITACHI	AMS2500	AMS
HITACHI	HUS	91xxxxxx	HITACHI	HUS110	HUS
HITACHI	HUS	93xxxxxx	HITACHI	HUS130	HUS
HITACHI	HUS	95xxxxxx	HITACHI	HUS150	HUS

NOTE: "xxxx" at Product Number of External Storage means arbitrary number or character. When target product is 9500V series, "xxxx" means the last 4 digits of the serial number.

As for external storage other than those above, information of Model name of External Storage in SIM and that of actual product name is the same. Refer to FRS for detail.

(24) SIM RC = 2194 is valid.

	0	1	2	3	4	5	6	7
byte 0x40 byte 0x43	0x0000B6AF (Related SSB Code)							
byte 0x44 byte 0x47	SIM type + Port#							
byte 0x48 byte 0x4B	0x00000000 (Reserved area)							
byte 0x4C byte 0x4F	Starting supervise at MIC_H timer							
byte 0x50 byte 0x53	SSB reported count (Comprehensive value)							
byte 0x54 byte 0x57	Link Failure supervised timer							
byte 0x58 byte 0x5B	Link Failure supervised timer (0.96 μ sec/count)							
byte 0x5C byte 0x5F	SSB: B65A reported count							
byte 0x60 byte 0x63	SSB: B65C reported count							
byte 0x64 byte 0x67	SSB: B65D reported count							
byte 0x68 byte 0x6B	SSB: B65E reported count							
byte 0x6C byte 0x6F	SSB: B660 reported count							
byte 0x70 byte 0x73	SSB: B661 reported count							
byte 0x74 byte 0x77	SSB: B668 reported count							
byte 0x78 byte 0x7B	SSB: B66A reported count							
byte 0x7C byte 0x7F	SSB: DDA1 reported count							

(25) Numbers of pair status changes
x‘0’: From Simplex to Duplex Pending
x‘1’: From Simplex to Duplex
x‘2’: From Duplex Pending to Duplex
x‘3’: From Duplex Pending to Suspend
x‘4’: From Duplex to Suspend
x‘5’: From Duplex to Simplex
x‘6’: From Duplex Pending to Simplex
x‘7’: From Suspend to Simplex
x‘8’: From Suspend to Duplex Pending
x‘9’: From Hold to Duplex
x‘a’: From Hold to Duplex Pending
x‘b’: From Hold to Simplex
x‘c’: From Simplex to Suspend
x‘d’: From Simplex to Hold
x‘e’: From Suspend to Hold
x‘f’: From Duplex to Duplex Pending

(26) Numbers of pair status changes
x‘0’: A request for suspension was received.
x‘1’: A suspension transaction was completed.
x‘2’: An instruction to delete a pair was received in the Suspend status.
x‘3’: An instruction to delete a pair was received in the Duplex Pending status.
x‘4’: An instruction to delete a pair was received in the Duplex status.
x‘5’: A pair deletion was completed.
x‘6’: An instruction to delete a pair was received in the Hold status.

(27) CHB#, Port# in PCB

The upper 5 bits indicate the CHB#.

The lower 3 bits indicate the Port# in the PCB.

Example : x‘DB’(bit string: 11011011) indicates CHB-2M (channel board location) and 8M (port name).

Cluster	Channel Board Location	Port Name	VSP G130 CHB#+Port# (HEX)	VSP G350, F350 CHB#+Port# (HEX)	VSP G370, F370 VSP G700, F700 VSP G900, F900 CHB#+Port# (HEX)
Cluster-1	CHB-1A	1A, 3A, 5A, 7A	x‘00’ to x‘03’	x‘00’ to x‘03’	x‘00’ to x‘03’
	CHB-1B	1B, 3B, 5B, 7B	—	x‘08’ to x‘0B’	x‘08’ to x‘0B’
	CHB-1C	1C, 3C, 5C, 7C	—	—	x‘10’ to x‘13’
	CHB-1D	1D, 3D, 5D, 7D	—	—	x‘18’ to x‘1B’
	CHB-1E	1E, 3E, 5E, 7E	—	—	x‘20’ to x‘23’
	CHB-1F	1F, 3F, 5F, 7F	—	—	x‘28’ to x‘2B’
	CHB-1G	1G, 3G, 5G, 7G	—	—	x‘30’ to x‘33’
	CHB-1H	1H, 3H, 5H, 7H	—	—	x‘38’ to x‘3B’
	CHB-1J	1J, 3J, 5J, 7J	—	—	x‘40’ to x‘43’
	CHB-1K	1K, 3K, 5K, 7K	—	—	x‘48’ to x‘4B’
	CHB-1L	1L, 3L, 5L, 7L	—	—	x‘50’ to x‘53’
	CHB-1M	1M, 3M, 5M, 7M	—	—	x‘58’ to x‘5B’
Cluster-2	CHB-2A	2A, 4A, 6A, 8A	x‘08’ to x‘0B	x‘10’ to x‘13’	x‘80’ to x‘83’
	CHB-2B	2B, 4B, 6B, 8B	—	x‘18’ to x‘1B’	x‘88’ to x‘8B’
	CHB-2C	2C, 4C, 6C, 8C	—	—	x‘90’ to x‘93’
	CHB-2D	2D, 4D, 6D, 8D	—	—	x‘98’ to x‘9B’
	CHB-2E	2E, 4E, 6E, 8E	—	—	x‘A0’ to x‘A3’
	CHB-2F	2F, 4F, 6F, 8F	—	—	x‘A8’ to x‘AB’
	CHB-2G	2G, 4G, 6G, 8G	—	—	x‘B0’ to x‘B3’
	CHB-2H	2H, 4H, 6H, 8H	—	—	x‘B8’ to x‘BB’
	CHB-2J	2J, 4J, 6J, 8J	—	—	x‘C0’ to x‘C3’
	CHB-2K	2K, 4K, 6K, 8K	—	—	x‘C8’ to x‘CB’
	CHB-2L	2L, 4L, 6L, 8L	—	—	x‘D0’ to x‘D3’
	CHB-2M	2M, 4M, 6M, 8M	—	—	x‘D8’ to x‘DB’

(28) After SIM is reported, the Controller Chassis recovers from Drive Box that the number is small to order turn.

(29) Please replace latter located ENC one by one, when two or more the ENC ACC exists.

(30) About “DB#/RDEV# (DB#/R#)” and “Disk Drive Number”, it is referred to THEORY OF OPERATION SECTION “4.1 DB Number - C/R Number Matrix”.

(31) When System Option Mode 471 is set to turning on, there is service report.

(32) When System Option Mode 741 is set to turning on, there is service report.

(33) Contents of Byte13 of an license key failure refer to the following lists.
Confirm the Program Product Installation status(capacity, duration) at the 'License' screen of Web Console.

Byte13	P.P.Name
0x03	TrueCopy
0x08	ShadowImage
0x0A	Universal Replicator
0x0B	Universal Volume Manager
0x0E	Open Volume Management
0x12	Data Retention Utility
0x13	LUN Manager
0x16	Performance Monitor
0x17	Volume Migration
0x18	Server Priority Manager
0x1B	Storage Navigator
0x1C	SNMP Agent
0x1D	JAVA API
0x21	Virtual Partition Manager
0x22	Volume Shredder
0x23	Volume Migration V2
0x26	Dynamic Provisioning
0x27	Remote Replication Extended
0x2A	Encryption License Key
0x2E	Dynamic Tiering
0x31	Resource Partition Manager
0x35	Thin Image
0x38	nondisruptive migration
0x39	global-active device
0x3C	Model upgrade license
0x3D	active flash
0x40	All Flash Array
0x41	dedupe and compression

(34) Restore the failure according to "5. Restoring replacement parts by Maintenance Utility" of REPLACE SECTION "2.3.2 Replacing a Drive".

(35) DKCPS#

The following table shows the numbers of DBPS in the storage system.

DKCPS Location	DKCPS# (HEX)
DKCPS1	x‘0’
DKCPS2	x‘1’

(36) SWPK#

MP numbers. See the table below show relations with the SWPK Location.

Cluster	SWPK Location	SWPK# (HEX) (*1)
Cluster-1	SWPK1	x‘00’
		x‘01’
		x‘02’
		x‘03’
		x‘04’
		x‘05’
		x‘06’
		x‘07’
Cluster-2	SWPK2	x‘10’
		x‘11’
		x‘12’
		x‘13’
		x‘14’
		x‘15’
		x‘16’
		x‘17’

*1: The upper one bit of the SWPK# indicates the SWPK location.
The lower one bit indicates the PECB location. Disregard the lower one bit because the object of SIM notification is SWPK.
Example :x ‘00’
- SWPK location (0: SWPK1, 1: SWPK2)
- PECB location

(37) CHBBPS#

CHBBPS consecutive numbers. See the table below show relations with the CHBBPS Location.

CHBBPS Location	CHBBPS# (HEX)
CHBBPS1	x‘0’
CHBBPS2	x‘1’

(38) CHBBFAN#

CHBBFAN consecutive numbers. See the table below show relations with the CHBBFAN Location.

Cluster	CHBBFAN Location	CHBBFAN# (HEX)
Cluster-1	CHBBFAN-10	x‘0’
	CHBBFAN-11	x‘1’
	CHBBFAN-12	x‘2’
	CHBBFAN-13	x‘3’
	CHBBFAN-14	x‘4’
Cluster-2	CHBBFAN-20	x‘5’
	CHBBFAN-21	x‘6’
	CHBBFAN-22	x‘7’
	CHBBFAN-23	x‘8’
	CHBBFAN-24	x‘9’

(39) PECB#

PECB consecutive numbers. See the table below show relations with the PECB Location.

Cluster	PECB Location	VSP G900 VSP F900 PECB# (HEX)
Cluster-1	PECB-1A	x'00'
	PECB-1B	x'01'
	PECB-1C	x'02'
	PECB-1D	x'03'
	PECB-1E	x'04'
	PECB-1F	x'05'
Cluster-2	PECB-2A	x'10'
	PECB-2B	x'11'
	PECB-2C	x'12'
	PECB-2D	x'13'
	PECB-2E	x'14'
	PECB-2F	x'15'

(40) Failed Part#

Failed part consecutive numbers. The table below shows relations with the part where failures occur.

Cluster	Failed Part	Failed Part# (HEX)
Cluster-1	DIMM00	x'00'
	DIMM01	x'01'
	DIMM02	x'02'
	DIMM03	x'03'
	DIMM10	x'04'
	DIMM11	x'05'
	DIMM12	x'06'
	DIMM13	x'07'
	CTL1	x'0F'
Cluster-2	DIMM00	x'10'
	DIMM01	x'11'
	DIMM02	x'12'
	DIMM03	x'13'
	DIMM10	x'14'
	DIMM11	x'15'
	DIMM12	x'16'
	DIMM13	x'17'
	CTL2	x'1F'

(41) If xx is other than 00 (Normal end), see TROUBLESHOOTING SECTION "2.2.6 Recovery procedure when LDEV formatting failed".

(42) Reported only if "Notify an alert when tier relocation is suspended by system" is enabled.

(43) The last three digits of the reported SIM (error cause code) indicate the cause of error occurrence as shown in the following table. Recovery actions for the following SIMs need to be performed by users.

Error cause code (output SIM)	Output timing	Cause of error occurrence		Description
		Category of cause	Detailed cause	
000 (631000)	When the automatic pool capacity expansion is in operation	System error	LDEV ID depletion	The maximum number of LDEVs in the system is already created. Therefore, pool volumes cannot be created.
001 (631001)			Cache management device shortage	The maximum of cache management device in the system is already created. Therefore, pool volumes cannot be created.
002 (631002)			Unobtainable system lock	The system lock cannot be obtained due to maintenance operations.

2.2 SIM Reference Codes Detected by the GUM

Table 2-12 SIM Reference Codes Detected by the GUM

Error			REF code 22,23,13	SIM 28	Level of error	Remarks
GUM detection error	GUM error	CTL 1	7d0000	f1	Moderate	
		CTL 2	7d0001	f1	Moderate	
	LAN error (Internal Network)	CTL 1	7d0100	f1	Moderate	
		CTL 2	7d0101	f1	Moderate	
	LAN error (CTL1-CTL2)	CTL 1	7d0200	f1	Moderate	
		CTL 2	7d0201	f1	Moderate	
	GUM AuditLog lost	CTL 1	7d0300	f1	Moderate	
		CTL 2	7d0301	f1	Moderate	
	GUM AuditLog Warning Threshold was exceeded	CTL 1	7d0400	f1	Moderate	
		CTL 2	7d0401	f1	Moderate	
	Notification of Alert failed	CTL 1	7d0500	f1	Moderate	
		CTL 2	7d0501	f1	Moderate	
	MP error	—	7d06xx	f1	Moderate	xx: MPU#, MP# in MPU (See (3))
	GUM security error detected	CTL 1	7d0700	f1	Moderate	
		CTL 2	7d0701	f1	Moderate	
	Failed to recover GUM configuration information	CTL 1	7d0800	f1	Moderate	
		CTL 2	7d0801	f1	Moderate	
	DKC warning	—	7d0900	f1	Serious	
	GUM version warning	CTL 1	7d0a00	f1	Moderate	
		CTL 2	7d0a01	f1	Moderate	
	Configuration backup failed	CTL 1	7d0b00	f1	Moderate	
		CTL 2	7d0b01	f1	Moderate	
Time Synchronization	Time Synchronization error	—	7ffa00	f1	Service	WARNING LED does not blink.
Processor boot failure	BOOT detected error	—	7900xx	f1	Moderate	xx: MPU#, MP# in MPU (See (3))

3. SIM Format

1. SIM Format

SIM Format (DKC SIM SSB28 = x‘F1’)

	0	1	2	3	4	5	6	7
0	x‘00’							
1	Permanent Error	‘0’		‘1’	x‘0’			
2	‘0’			‘1’	x‘0’			
3	x‘0000’							
4								
5	Device Type (ORB CODE)							
6	Serial # valid	Device address valid	Track address valid	‘0’	Format (x‘F’)			
7	SIM sense record ID (x‘E0’)							
8	Range subject to the error (See (1))				Range affected by repair (See (2))			
9	Level of error (See (3))		Number of faulty SPs (See (4))	Number of SPs in SSID (See (5))	Number of faulty SSIDs (See (6))	Number of affected SSIDs (See (7))	Status (See (8))	0
10	Resend SIM (See (9))	(‘0000000’)						
11	Hardware level							
12	Hardware level							
13	Isolation code (See (11))							
14	SSB ID (See (12))	SIM sequence number (SIM log record #)						‘0’
15	Controller Chassis serial number (x‘0D05’+Controller Chassis sequence number)							
16								
17								
18								
19								
20	SSID of self storage system							
21								
22	Symptom code (See (13))							
23								
24	Logging and Message Control (See (14))							
25	Program action code (x‘10’)							
26	Dual Frame	EDCC Mode	‘00’		Asynchro-nous operation	Serial channel	Report output (1)	‘0’

(to be continued)

(Continued from preceding sheet)

	0	1	2	3	4	5	6	7
27	‘0’	‘0000’					Extension path configu-ration	Fenced storage path
28	x‘F1’							
29	Affected SSID							
30								
31	x‘00’							

SIM Format (CACHE SIM SSB28 = x‘F2’)

	0	1	2	3	4	5	6	7
0	x‘00’							
1	Permanent Error	‘0’		‘1’	x‘0’			
2	‘0’			‘1’	x‘0’			
3	x‘0000’							
4								
5	Device Type (ORB CODE)							
6	Serial # valid	Device address valid	Track address valid	‘0’	Format (x‘F’)			
7	SIM sense record ID (x‘E0’)							
8	Range subject to the error (See (1))				Range affected by repair (See (2))			
9	Level of error (See (3))		Number of faulty SPs (See (4))	Number of SPs in SSID (See (5))	Number of faulty SSIDs (See (6))	Number of affected SSIDs (See (7))	Status (See (8))	0
10	Resend SIM (See (9))	(‘0000000’)						
11	Hardware level							
12	Hardware level							
13	Isolation code (See (11))							
14	SSB ID (See (12))	SIM sequence number (SIM log record #)						‘0’
15	Controller Chassis serial number (x‘0D05’+Controller Chassis sequence number)							
16								
17								
18								
19								
20	SSID of self storage system							
21								
22	Symptom code (See (13))							
23								
24	Logging and Message Control (See (14))							
25	Program action code (x‘10’)							
26	Dual Frame	EDCC Mode	‘00’		Asynchro-nous operation	Serial channel	Report output	‘0’
27	‘0’	‘0000’				Extension path configu-ration	Fenced storage path	
28	x‘F2’							
29	Affected SSID							
30								
31	x‘00’							

SIM Format (DEVICE SIM SSB28 = x‘FE’)

	0	1	2	3	4	5	6	7
0	x‘0000’							
1								
2	Storage Control Type (x‘06’)							
3	x‘00’							
4	Affected SP		Device Address					
5	Device Type							
6	Serial # valid	Device address valid	Track address valid	‘0’	Format (x‘F’)			
7	SSB ID (See (12))	SIM Sequence ID						‘0’
8	Device Exception (x‘1’)				Service Message (See (15))			
9	Level of error (See (3))		‘000000’					
10	Resend SIM (See (9))	(‘0000000’)						
11	Exception Class FRU List Code (x‘80’)							
12	Hardware and Microcode Corequisite Indicator (x‘01’)							
13	Device Address (See (10))							
14	Action Flag (x‘05’)							
15	Drive serial number (x‘0D05’+Drive Box sequence number)							
16								
17								
18								
19								
20	SSID of self storage system							
21								
22	Symptom code (See (13))							
23								
24	Logging & Message Control (See (14))							
25	Program Action Code (x‘10’)							
26	Dual Frame	EDCC Mode	x‘0’	x‘0’	Asynchro-nous operation	Serial Channel	‘1’	‘0’
27	x‘0’				x‘0’	Extension path configu-ration	Storage path	
28	x‘FE’							
29	x‘000000’							
30								
31								

SIM Format (MEDIA SIM SSB28 = x‘FF’)

	0	1	2	3	4	5	6	7
0	x‘0000’							
1								
2	Storage Control Type (x‘06’)							
3	x‘00’							
4	Affected SP		Device Address					
5	Device Type							
6	Serial # valid	Device address valid	Track address valid	‘0’	Format (x‘F’)			
7	SSB ID (See (12))	SIM Sequence ID						‘0’
8	Device Exception (x‘1’)				Service Message (x‘1’)			
9	Level of error (See (3))		Media Maintenance Procedure Number (correctable: x‘07’, uncorrectable: x‘05’)					
10	Resend SIM (See (9))	(‘0000000’)						
11	Exception Class FRU List Code (x‘80’)							
12	Hardware and Microcode Corequisite Indicator (x‘01’)							
13	Device Address (See (10))							
14	Correctable: x‘87’, uncorrectable: x‘85’							
15	Drive serial number (x‘0D05’+Drive Box sequence number)							
16								
17								
18								
19								
20	SSID of self storage system							
21								
22	Symptom code (See (13))							
23								
24	Logging & Message Control (See (14))							
25	Program Action Code (x‘10’)							
26	Dual Frame	EDCC Mode	x‘0’	x‘0’	Asynchro-nous operation	Serial Channel	‘1’	‘0’
27	x‘0’				x‘0’	Extension path configu-ration	Storage path	
28	x‘FF’							
29	Cylinder Address High							
30	Cylinder Address Low							
31	Head Address							

2. Interference Wave and Range and Supplementary Note

(1) Range subject to the error

(a) When byte 28 is x‘F1’ (Controller Chassis SIM)

x‘0’: Not used
x‘1’: Error range not known
x‘2’: SP error
x‘3’: CHL-I error
x‘4’: Not affect performance
x‘5’ to x‘F’: Not used

(b) When byte 28 is x‘F2’ (CACHE SIM)

x‘0’: Not used
x‘1’: Error range not known
x‘2’: Error between SP and CACHE
x‘3’: CACHE error
x‘4’: DC/FW error
x‘5’: FW error
x‘6’ to x‘F’: Not used

(2) Range affected by repair

(a) When byte 28 is x‘F1’(Controller Chassis SIM)

x‘0’: Not used
x‘1’: Repair range not known
x‘2’: Repair does not affect performance
x‘3’: SP disabled during repair
x‘4’: SSID disabled during repair
x‘5’ to x‘F’: Not used

(b) When byte 28 is x‘F2’ (CACHE SIM)

x‘0’: Not used
x‘1’: Repair range not known
x‘2’: Repair does not affect performance
x‘3’: CACHE error
x‘4’: DC/FW error
x‘5’: FW error
x‘6’ to x‘F’: Not used

(3) Level of error
B‘00’: Service SIM
B‘01’: Moderate SIM
B‘10’: Serious SIM
B‘11’: Acute SIM

(4) Number of faulty SPs
B‘0’: 1 SP
B‘1’: 2 SPs

(5) Number of SPs in SSID
B‘0’: 2 SPs
B‘1’: 4 SPs

(6) Number of faulty SSIDs
B‘0’: 1
B‘1’: 2

(7) Number of affected SSIDs
B‘0’: 1
B‘1’: 2

(8) Status
B‘0’:Degeneration
B‘1’:Stop

(9) Resend SIM
B‘0’: Not resent SIM
B‘1’: Resent SIM

(10) Device address
See bytes 13 of the REF codes listed in Sections “2.1 SIM Reference Codes Detected by the Processor” and “2.2 SIM Reference Codes Detected by the GUM”.

(11) Isolation code
See bytes 13 of the REF codes listed in Sections “2.1 SIM Reference Codes Detected by the Processor” and “2.2 SIM Reference Codes Detected by the GUM”.

(12) SSB ID
B‘0’ = SVP
B‘1’ = SP

(13) Symptom code
See bytes 22 and 23 of the REF codes listed in Sections “2.1 SIM Reference Codes Detected by the Processor” and “2.2 SIM Reference Codes Detected by the GUM”.

(14) Logging and Message control
Bit 0 - 3: Not used
Bit 4 - 5: Logging
B‘00’: No log
B‘01’: Unconditional log
B‘10’: Log only once
B‘11’: Log only if persistent
Bit 6 - 7: Operator message
B‘00’: No message
B‘01’: Unconditional message
B‘10’: Send only once
B‘11’: Send only if persistent

(15) Service Message
x‘1’: Action
x‘C’: No action