

16. SIM RC SECTION

16. SIM

16.1 Reference Code

A six-byte reference code (RC) is provided for a SIM (service information message) to identify an error and error section. The following shows 32 SIM bytes and reference codes.

Byte	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
SIM SSB	00	90	10	00	00	00	8F	E0	44	10	00	04	00	80	04	0C	69	00	00	00	00	02	30	70	05	10	42	C0	F1	00	02	00

Indicates SIM.

RC = 307080

SSB13

SSB22, 23

SIM type

F1: DKC SIM

F2: CACHE SIM

FE: DEVICE SIM

FF: MEDIA SIM

16.2 Reference Codes

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

16.2.1 SIM Reference Codes Detected by the Processor

(1/4)

Error		REF CODE			SIM 28	Level of error	Host report	Remarks	
		22	23	13					
LCP/MCP error	CHA hardware error	21	3Z	XY	F1	Moderate	Yes	X: Processor # Y: LCP# 1 Z: LCP# 2	(*1) (*3) (*3)
	ADP permanent error	21	70	X0	F1	Moderate	Yes	X: Processor #	(*1)
	ADP temporary error	21	71	XY	F1	Service	No	X: Processor # Y: LCP#	(*1) (*3)
	ADP blocking	21	72	XY	F1	Moderate	Yes	X: Processor # Y: LCP#	(*1) (*3)
Processor error	CHK1A threshold over	30	70	X0	F1	Service	No	X: Processor #	(*1)
	CHK1B threshold over	30	71	X0	F1	Service	No	X: Processor #	(*1)
	CHK3 threshold over	30	72	X0	F1	Service	No	X: Processor #	(*1)
	Processor blocking	30	73	X0	F1	Moderate	Yes	X: Processor #	(*1)
	FM threshold over	30	74	X0	F1	Service	No	X: Processor #	(*1)
	FM error	30	75	X0	F1	Moderate	Yes	X: Processor #	(*1)
	LDEV blockade (Effect of processor blockade)	30	90	X0	F1	Serious	Yes	X: Processor #	(*1)
	P/S OFF impossible	38	8F	00	F1	Moderate	No		
	P/S OFF impossible (Device reserved)	38	9F	00	F1	Moderate	No		
	Undefined Package is mounted	39	90	X0	F1	Moderate	No	X: Processor #	(*1)(*5)
	V-R or serial number is inconsistent	39	91	X0	F1	Moderate	No	X: Processor #	(*1)
	RAID5 booster is inconsistent	39	92	X0	F1	Serious	No	X: Processor #	(*1)
	Replace failed	39	93	X0	F1	Moderate	No	X: Processor #	(*1)
	Micro-program version up	39	94	X0	F1	Service	No	X: Processor #	(*1)
	Micro-program version up impossible	39	95	XY	F1	Service	No	X: Processor # Y: reason code	(*1) (*13)
M-bus error	Package type changed	39	96	XY	F1	Service	No	X: Processor # Y: Change type #	(*1) (*14)
	Warning of M bus open (SMC detected)	FF	D0	X0	F1	Moderate	No	X: 0 = Side A 1 = Side B	(*2)
	Warning of M bus open (SMP detected)	FF	D1	X0	F1	Moderate	No	X: Processor#	(*1)
	Warning of CHK error (SMP detected)	FF	D2	X0	F1	Moderate	No	X: Processor#	(*1)
	Arbiter error	FF	E9	X0	F1	Service	No	X: Processor #	(*1)
	Bus blocking	FF	EA	00	F1	Serious	Yes		(*6)
	CHK3 threshold over	FF	EB	00	F1	Service	No		
F-bus error (H/L)	Sequential mode only (*15) (Bus mode is fixed)	FF	ED	00	F1	Service	No		
	Warning of bus open (F-bus/L) (SMC detected)	FF	F6	X0	F1	Moderate	No	X: 0 = Side A 1 = Side B	(*2)
	Warning of CHK error (F-bus/L) (SMP detected)	FF	F7	X0	F1	Moderate	No	X: Processor#	(*1)
	Arbiter error	FF	F9	YX	F1	Service	No	X: 0 = L, 1 = H Y: Processor #	(*1)
	Bus blocking	FF	FA	0X	F1	Serious	Yes	X: 0 = L, 1 = H	(*6)
	F bus (low) CHK3 threshold over	FF	FB	00	F1	Service	No		
	Warning of F bus open (BSA detected)	FF	FC	YX	F1	Moderate	No	X: 0 = L, 1 = H Y: Processor#	(*1)
	Warning of LIVE INS (BSA detected)	FF	FD	YX	F1	Moderate	No	X: 0 = L, 1 = H Y: Processor#	(*1)
CHA, CHK2 (processor)	Warning of CHK error (BSA detected)	FF	FE	YX	F1	Moderate	No	X: 0 = L, 1 = H Y: Processor#	(*1)
	RCHA temporary error	3F	84	X0	F1	Service	No	X: Processor #	(*1)
CHS, CHK2 (processor)	RCHA blocking	3F	85	X0	F1	Serious	Yes	X: Processor #	(*1)
	SCP path temporary error	3F	86	XY	F1	Service	No	X: Processor# Y: SCP number	(*1)
	SCP path blockade	3F	87	XY	F1	Moderate	Yes	X: Processor# Y: SCP number	(*1)

[Note] REF CODE = 3073

If a recoverable processor failure (Micro logical error, CHK-1A) occurs, SIM (REF CODE = 3073) is reported to HOST.

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REV.13	Feb.1996	Mar.1996	May.1996	Aug.1996	Mar.1997	Jun.1997
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SIM-RC02-10

SIM Reference Codes Detected by the Processor

(2/4)

Error			REF CODE			SIM 28	Level of error	Host report	Remarks
			22	23	13				
DKA CHK2 (processor)	Pinned slot		CF	94	XX	F1	Moderate	No	XX:LDEV number
	DRR temporary error		CF	80	X0	F1	Service	No	X: Processor # (*1)
	SCA temporary error		CF	81	XY	F1	Service	No	X: Processor # (*1) Y: Port # (*4)
	DRR blocking		CF	82	X0	F1	Moderate	Yes	X: Processor # (*1)
	SCA blocking (0-3)		CF	83	XY	F1	Moderate	Yes	X: Processor # (*1) Y: Port # (*4)
	SCSI port blocking (Effect of PATH INLINE failed)		CF	84	XY	F1	Moderate	No	X: Processor # (*1) Y: Port # (*4)
	LDEV blockade (Effect of SCA blockade)		CF	90	XY	F1	Serious	Yes	X: Processor # (*1) Y: Port # (*4)
Cache data error	Pinned slot		FF	04	XX	F2	Moderate	No	XX:LDEV number
Cache error (Side A/B)	Area is volatiled		FF	CD	0X	F2	Service	No	X: 0 = Side A (*2) 1 = Side B
	Package is volatiled		FF	CE	0X	F2	Service	No	X: Package # (*2) Side A:Even, Side B:Odd
	Module group is volatiled		FF	CF	YX	F2	Service	No	X: Processor # (*2) Side A:Even, Side B:Odd Y: Module group #
	Correctable error	1 bit error	FF	F0	YX	F2	Service	No	X: Package # (*2,9,10) Side A:Even, Side B:Odd Y: Module group #
		2 bits error	FF	F8					
	Cache temporary error		FF	F1	YX	F2	Service	Yes	X: Package # (*2,9,10) Side A:Even, Side B:Odd Y: Module group #
	Module group blocking		FF	F2	YX	F2	Moderate	Yes	X: Package # (*2,9,10) Side A:Even, Side B:Odd Y: Module group #
	Package blocking		FF	F3	0X	F2	Moderate	Yes	X: Package # (*2,9,10) Side A:Even, Side B:Odd
	Area blocking		FF	F4	0X	F2	Serious	Yes	X: 0 = Side A (*2) 1 = Side B
	Both area failed		FF	F5	0X	F2	Moderate	No	X: Package # (*2) Side A:Even, Side B:Odd
Warning of CHK error(CPC detected)		FF	FF	0X	F2	Moderate	No	X: CPC# (*12)	
Shared memory error (Side A/B)	Configuration check		FF	D3	XX	F1	Service	No	XX: Error code (*18)
	One side Area is volatiled		FF	DF	0X	F1	Service	No	X: 0 = Side A (*2) 1 = Side B
	Correctable error		FF	E0	YX	F1	Service	No	X: 0 = Side A (*2,9) 1 = Side B Y: Module #
	Uncorrectable error		FF	E1	0X	F1	Service	Yes	X: 0 = Side A (*2,9) 1 = Side B
	Area blocking		FF	E2	0X	F1	Serious	Yes	X: 0 = Side A (*2,9) 1 = Side B
	Real memory size inconsistent		FF	E3	XY	F1	Serious	No	X: Number of module (side A) Y: Number of module (side B) (*8)
	Both side invalid		FF	E5	00	F1	Acute	No	
	Replace failed		FF	E4	0X	F1	Serious	No	X: 0 = Side A (*2) 1 = Side B
	Configuration information compare error		FF	E6	00	F1	Acute	No	
	Shared memory is volatiled.		FF	E7	00	F1	Serious	No	
Configration unmatched		FF	E8	00	F1	Acute	No		

SIM Reference Codes Detected by the Processor

(3/4)

Error		REF CODE			SIM 28	Level of error	Host report	Remarks
		22	23	13				
Shared memory error (Side A/B)	CHK3 threshold over	FF	EC	0X	F1	Serious	No	X: 0 = Side A (*2) 1 = Side B
	Area temporary blocking	FF	EE	0X	F1	Service	Yes	X: 0 = Side A (*2) 1 = Side B
	Power stoppage/Shared memory is not volatiled	FF	EF	00	F1	Service	No	(*20)
Drive error (normal R/W)	SCSI temporary error	DF	7Y	XX	FE	Service	No	XX: Drive number (CDEV#:4b+RDEV#:4b) Y: Drive path 0: Boundary 0 1: Boundary 1
	Drive temporary error	EF	1A	XX	FE	Service	No	XX: Drive number (CDEV#:4b+RDEV#:4b)
	Drive media error	43	40	XX	FF	Service	No	XX: Drive number (CDEV#:4b+RDEV#:4b)
	SCSI blockade	DF	8Y	XX	FE	Moderate	Yes **	XX: Drive number (CDEV#:4b+RDEV#:4b) Y: Drive path 0: Boundary 0 1: Boundary 1
	LDEV blockade (Effect of SCSI blockade) *16	DF	9Y	XX	FE	Serious	Yes **	XX: Drive number (CDEV#:4b+RDEV#:4b) Y: Drive path 0: Boundary 0 1: Boundary 1
	Drive blockade (drive)	EF	10	XX	FE	Serious	Yes **	XX: Drive number (CDEV#:4b+RDEV#:4b)
	Drive blockade (Effect of Dynamic sparing normal end)	EF	11	XX	FE	Service	Yes **	XX: Drive number (CDEV#:4b+RDEV#:4b)
	LDEV blockade (Effect of drive blockade) *16	EF	90	XX	FE	Serious	Yes **	XX: Drive number (CDEV#:4b+RDEV#:4b)
	Drive blockade (media)	43	C0	XX	FF	Serious	Yes **	XX: Drive number (CDEV#:4b+RDEV#:4b)
	Correction copy start *7	45	10	XX	FE	Service	Yes **	XX: Drive number (CDEV#:4b+RDEV#:4b) (Source side drive)
	Correction copy normal end *7	45	20	XX	FE	Service	Yes **	XX: Drive number (CDEV#:4b+RDEV#:4b) (Source side drive)
	Correction copy abnormal end *7	45	21	XX	FE	Serious	Yes **	XX: Drive number (CDEV#:4b+RDEV#:4b) (Source side drive)
	Correction copy discontinued *7	45	22	XX	FE	Service	No	XX: Drive number (CDEV#:4b+RDEV#:4b) (Source side drive)
	Correction copy warning end* *7 (With blockade LDEV or some error)	45	24	XX	FE	Service	Yes **	XX: Drive number (CDEV#:4d+RDEV#:4b) (Source side drive)

* : Warning end : (1) LDEV blockade status is detected, and copy process for the LDEV is skipped.

(2) Some failure is detected, and copy process is complete.

** : When the drive is 3880 emulation mode, the SIM is not reported to host.

SIM Reference Codes Detected by the Processor

(4/4)

Error		REF CODE			SIM 28	Level of error	Host report	Remarks
		22	23	13				
Drive error (normal R/W)	Dynamic sparing start *7 (Drive copy)	46	10	XX	FE	Service	Yes **	XX: Drive number (CDEV#:4b+RDEV#:4b) (Source side drive)
	Dynamic sparing normal end *7 (Drive copy)	46	20	XX	FE	Service	Yes **	XX: Drive number (CDEV#:4b+RDEV#:4b) (Source side drive)
	Dynamic sparing abnormal end *7 (Drive copy)	46	21	XX	FE	Moderate	Yes **	XX: Drive number (CDEV#:4b+RDEV#:4b) (Source side drive)
	Dynamic sparing discontinued *7	46	22	XX	FE	Service	No	XX: Drive number (CDEV#:4b+RDEV#:4b) (Source side drive)
	Dynamic sparing warning end* *7 (With blockade LDEV or some error) (Drive copy)	46	24	XX	FE	Service	Yes **	XX: Drive number (CDEV#:4b+RDEV#:4b) (Source side drive)
	Pinned slot	EF	04	XX	FE	Moderate	No	XX: LDEV#
	LDEV read only	EF	30	XX	FE	Serious	Yes **	XX: LDEV number
Drive error (ORM)	SCSI temporary error	50	0Y	XX	FE	Service	No	XX: Drive number (CDEV#:4b+RDEV#:4b) Y: Drive path 0: Boundary 0 1: Boundary 1
	Drive temporary error	50	10	XX	FE	Service	No	XX: Drive number (CDEV#:4b+RDEV#:4b)
	Drive media error	50	20	XX	FF	Service	No	XX: Drive number (CDEV#:4b+RDEV#:4b)
SVP interface error	Ethernet error for SVP	14	00	X0	F1	Moderate	Yes	X: Processor number
	SIM transfer failure to SVP	14	01	X0	F1	Serious	Yes	X: Processor number
Power error	HDU power off	AC	50	XY	F1	Moderate	Yes	X: DKU number *11 Y: HDU number *11
	HDU power recovered	AC	51	XY	F1	Service	No	X: DKU number *11 Y: HDU number *11

* : Warning end : (1) LDEV blockade status is detected, and copy process for the LDEV is skipped.

(2) Some failure is detected, and copy process is complete.

** : When the drive is 3880 emulation mode, the SIM is not reported to host.

SIM Reference Codes Detected by the Processor for HRC/HODM

(1/2)

Error		REF CODE			SIM	Level of error	Host report	Remarks
		22	23	13				
RCP error	Logical path(s) on the remote copy connections was logically blocked (Due to an error conditions)	21	80	XY	F1	Moderate	Yes	X: Processor # (*1) Y: LCP# 1 (*3)
	The logical path has been recovered from blocked condition on the remote copy conditions.	21	81	XY	F1	Service	Yes (*19)	X: Processor # (*1) Y: LCP#1 (*3)
Pair volume status error	HRC/HODM for this volume was suspended (Due to an unrecoverable failure on the remote copy connections.)	DF	00	XX	FE	Serious	Yes (*19)	XX: LDEV number
	HRC/HODM for this volume was suspended (Due to an unrecoverable failure on the M-VOL or the remote copy connections)	DF	01	XX	FE	Serious	Yes (*19)	XX: LDEV number
	HRC/HODM for this volume was suspended (Due to an unrecoverable failure on the R-VOL)	DF	02	XX	FE	Serious	Yes (*19)	XX: LDEV number
	HRC for this volume was suspended (Caused by DFW to the R-VOL was prohibited)	DF	05	XX	FE	Serious	Yes (*19)	XX: LDEV number
	HRC for this volume was suspended (Due to an internal error condition detected by the RCU)	DF	06	XX	FE	Serious	Yes (*19)	XX: LDEV number
	HRC for this volume was suspended (Caused by Delete pair operation was issued to the R-VOL)	DF	07	XX	FE	Serious	Yes (*19)	XX: LDEV number
	HRC started the initial copy or out of sync for this volume.	DF	08	XX	FE	Service	Yes (*19)	XX: LDEV number
	HRC completed the initial copy for this volume.	DF	09	XX	FE	Service	Yes (*19)	XX: LDEV number
	HODM started the migration copy or out of sync for this volume.	DF	0A	XX	FE	Service	Yes (*19)	XX: LDEV number
	HODM completed the migration copy for this volume.	DF	0B	XX	FE	Service	Yes (*19)	XX: LDEV number
	MCU changed volume pair status. (Operation from an SVP/remote console or a host processor)	DF	0C	XX	FE	Service	No	XX: LDEV number
	Status of the M-VOL was not consistent with the R-VOL.	DF	0D	XX	FE	Serious	Yes (*19)	XX: LDEV number
	HRC for this volume was deleted. (Operation from an SVP/remote console or a host processor)	DF	0E	XX	FE	Service	Yes (*19)	XX: LDEV number
	HODM for this volume was deleted. (Operation from an SVP/remote console)	DF	0F	XX	FE	Service	Yes (*19)	XX: LDEV number
	HODM started the erase operation for the R-VOL.	DF	18	XX	FE	Service	Yes (*19)	XX: LDEV number
	HODM completed the erase operation for the R-VOL.	DF	19	XX	FE	Service	Yes (*19)	XX: LDEV number
	Erase operation for this volume was not completed. (Due to an error conditions)	DF	1A	XX	FE	Serious	Yes	XX: LDEV number
	Status of the R-VOL is changed.	DF	2Y	XX	FE	Service	Yes (*19)	XX: LDEV number Y: (note *17)
	RCU changed status of R-VOL to suspend. (Operation from an SVP/remote console or a host processor.)	DF	30	XX	FE	Service	No	XX: LDEV number
	Status of the R-VOL was changed from suspend to simplex. (Operation from an SVP/remote console or a host processor.)	DF	31	XX	FE	Service	No	XX: LDEV number

SIM Reference Codes Detected by the Processor for HRC/HODM

(2/2)

Error		REF CODE			SIM 28	Level of error	Host report	Remarks
		22	23	13				
Pair volume status error	Status of R-VOL was changed from duplex to simplex. (Operation from an SVP/remote console or a host processor.)	DF	32	XX	FE	Service	No	XX: LDEV number
	Status of the R-VOL was changed from pendingduplex to simplex. (Operation from an SVP/remote console or a host processor.)	DF	33	XX	FE	Service	No	XX: LDEV number
	MCU detected an Acute or Serious Level SIM for RCU.	DF	40	XX	FE	Serious	Yes	XX: LDEV number
	MCU detected a Moderate Level SIM for RCU.	DF	48	XX	FE	Moderate	Yes	XX: LDEV number

[Note] REF CODE = DF40 and DF48

This SIM is reported only for HODM.

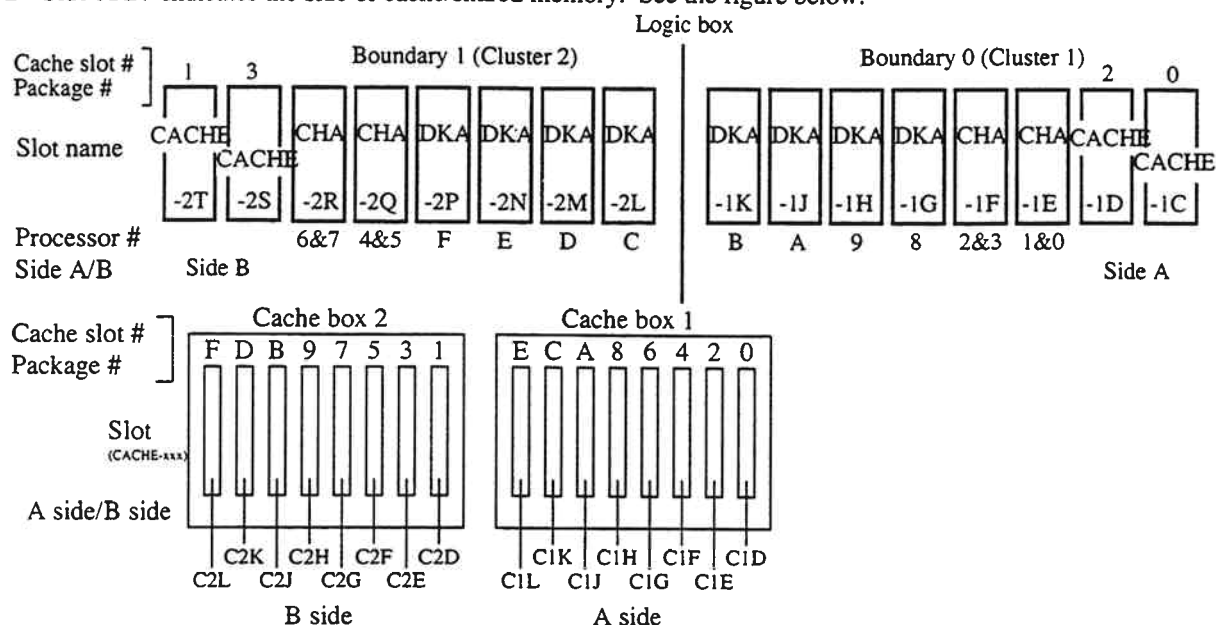
In case of HRC, MCU reports to host the SIM that is reported from RCU with no modification.

SIM Reference Codes Detected by the Processor for HRC Semisynchronous mode

Error		REF CODE			SIM 28	Level of error	Host report	Remarks
		22	23	13				
Pair volume status error	HRC for this volume was suspended (Due to an unrecoverable failure on the remote copy connections.)	DE	00	XX	FE	Serious	Yes (*19)	XX: LDEV number
	HRC for this volume was suspended (Due to an unrecoverable failure on the M-VOL or the remote copy connections)	DE	01	XX	FE	Serious	Yes (*19)	XX: LDEV number
	HRC for this volume was suspended (Due to an unrecoverable failure on the R-VOL)	DE	02	XX	FE	Serious	Yes (*19)	XX: LDEV number
	HRC for this volume was suspended (Caused by DFW to the R-VOL was prohibited)	DE	05	XX	FE	Serious	Yes (*19)	XX: LDEV number
	HRC for this volume was suspended (Due to an internal error condition detected by the RCU)	DE	06	XX	FE	Serious	Yes (*19)	XX: LDEV number
	HRC for this volume was suspended (Caused by Delete pair operation was issued to the R-VOL)	DE	07	XX	FE	Serious	Yes (*19)	XX: LDEV number
	HRC started the initial copy or out of sync for this volume.	DE	08	XX	FE	Service	Yes (*19)	XX: LDEV number
	HRC completed the initial copy for this volume.	DE	09	XX	FE	Service	Yes (*19)	XX: LDEV number
	MCU changed volume pair status. (Operation from an SVP/remote console or a host processor)	DE	0C	XX	FE	Service	No	XX: LDEV number
	Status of the M-VOL was not consistent with the R-VOL.	DE	0D	XX	FE	Serious	Yes (*19)	XX: LDEV number
	HRC for this volume was deleted. (Operation from an SVP/remote console or a host processor)	DE	0E	XX	FE	Service	Yes (*19)	XX: LDEV number
	Status of the R-VOL is changed.	DE	2Y	XX	FE	Service	Yes (*19)	XX: LDEV number Y: (note *17)
	RCU changed status of R-VOL to suspend. (Operation from an SVP/remote console or a host processor.)	DE	30	XX	FE	Service	No	XX: LDEV number
	Status of the R-VOL was changed from suspend to simplex. (Operation from an SVP/remote console or a host processor.)	DE	31	XX	FE	Service	No	XX: LDEV number
	Status of R-VOL was changed from duplex to simplex. (Operation from an SVP/remote console or a host processor.)	DE	32	XX	FE	Service	No	XX: LDEV number
	Status of the R-VOL was changed from pendingduplex to simplex. (Operation from an SVP/remote console or a host processor.)	DE	33	XX	FE	Service	No	XX: LDEV number

*1 Processor #: x'0' to x'F' indicates the processor number. See the figure below.

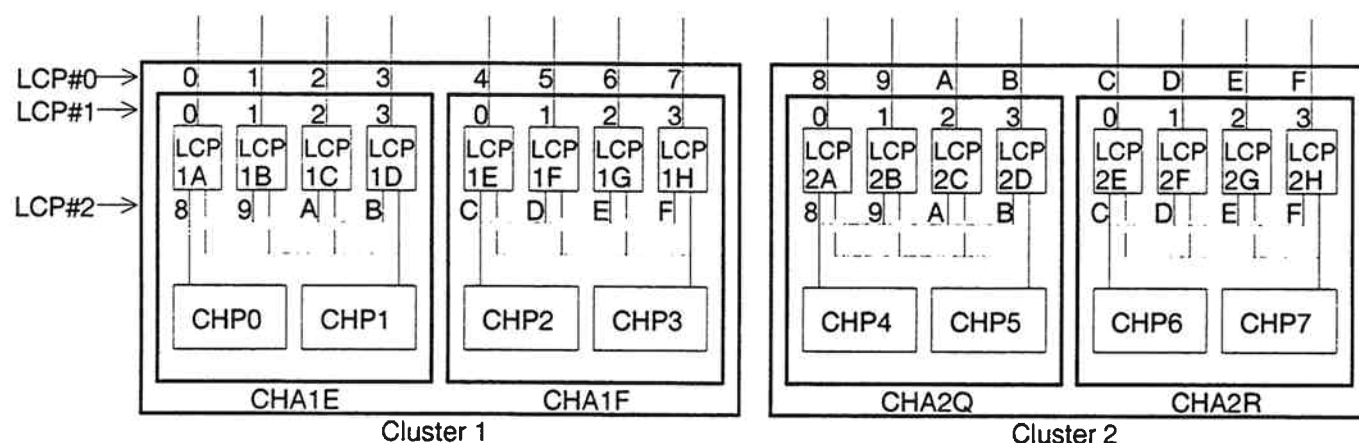
*2 Side A/B: Indicates the side of cache/shared memory. See the figure below.



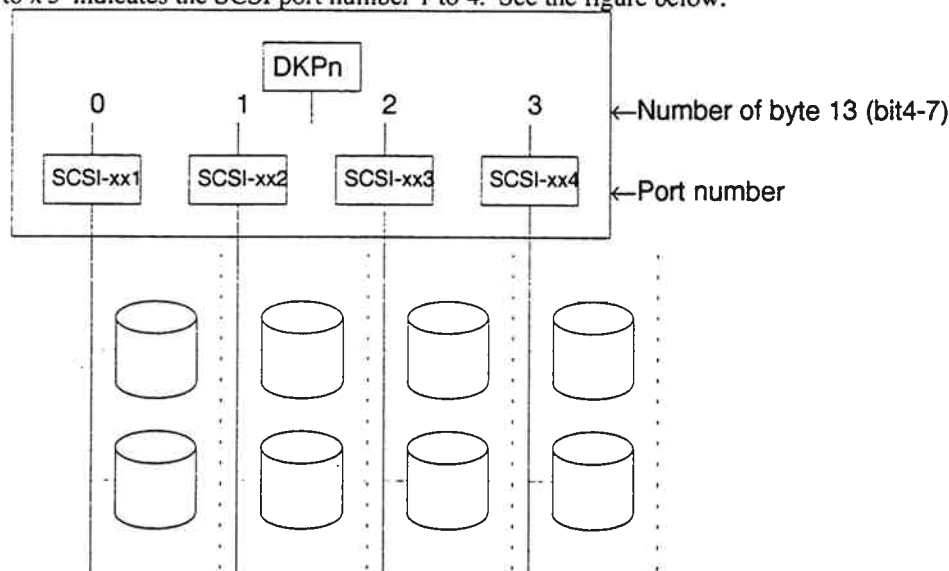
*3 LCP#0: x'0' to x'F' indicates the LCP number. See the figure below.

LCP#1: x'0' to x'3' indicates the LCP number. See the figure below.

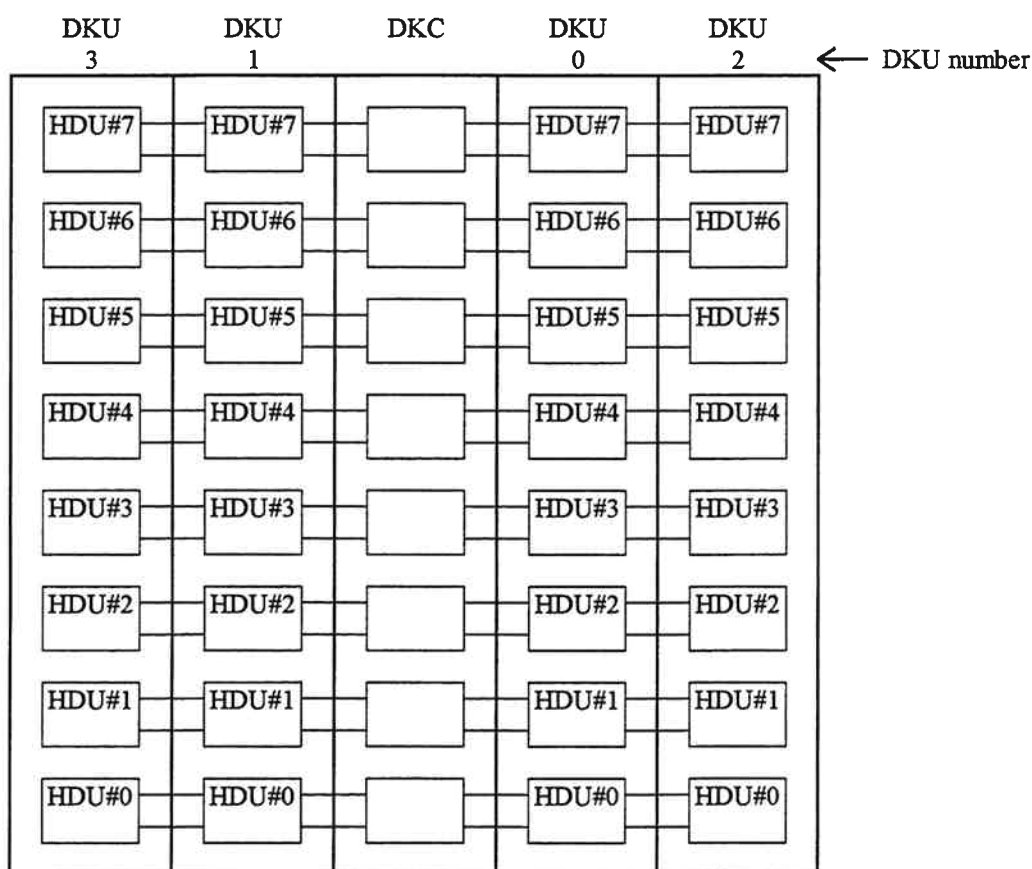
LCP#2: x'8' to x'F' indicates the LCP number. See the figure below.



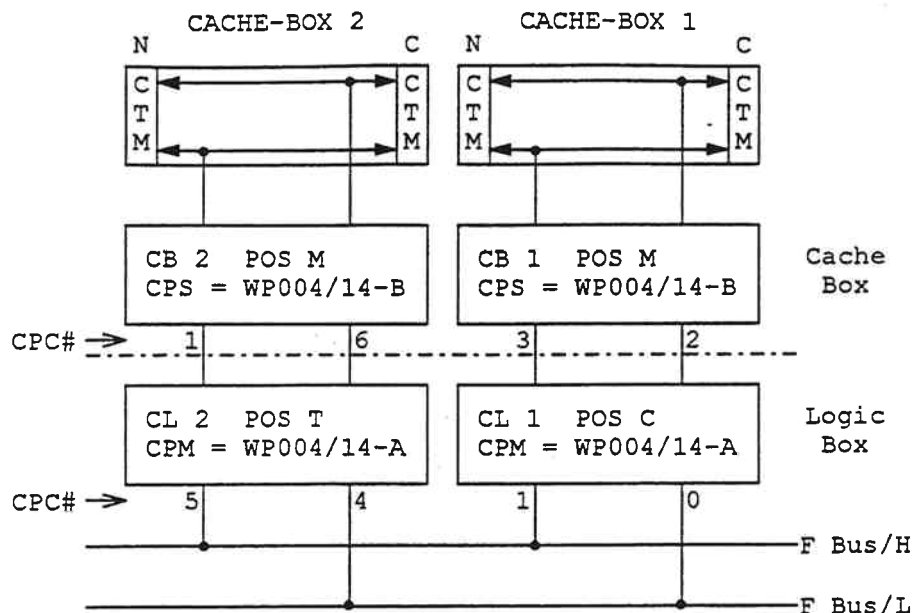
*4 Port #: x'0' to x'3' indicates the SCSI port number 1 to 4. See the figure below.



- *5 The package that is not defined in the configuration information exists.
If it is prepared for new installation, it is necessary to do the new installation procedure.
Otherwise it should be pulled out by executing P/S off.
- *6 Isolate the error according to the procedure shown in TRBL05-20.
- *7 Isolate the error according to the procedure shown in TRBL05-170.
- *8 Recover the error according to the procedure shown in TRBL05-260.
- *9 Perform error isolation according to the procedure given in the two separate pages attached to TRBL05-280.
- *10 If memory module group (CMxx) is designated by FPC, that module may be isolated from associated SSBs.
Isolate the memory module according to the procedure given in the page attached to TRBL05-290.
- *11 DKU#: x'0' to x'3' indicates DKU number. See the figure below.
HDU#: x'0' to x'7' indicates HDU number. See the figure below.



*12 CPC#:x'0' to x'7' indicates the CPC number. See the figure below.



*13 reason code

- x'0' : Pinned data exist
- x'1' : The shutdown of the power supply was occurred
- x'2' : Invalid Version/Revision exists

*14 Change type number

- x'1' : From SRAM package to DRAM package
- x'2' : From DRAM package to SRAM package
- x'3' : From unmounted package to DRAM package

*15 Isolate the error according to the procedure shown in TRBL05-320.

*16 Recover LDEVs according to the procedure shown in TRBL05-330.

*17 Change pair status number

- x'0' : From simplex to duplex pending
- x'1' : From simplex to duplex
- x'2' : From pending duplex to duplex
- x'3' : From pending duplex to suspend
- x'4' : From duplex to suspend
- x'5' : From duplex to simplex
- x'6' : From pending duplex to simplex
- x'7' : From suspend to simplex
- x'8' : From suspend to duplex pending

*18 Error code

- x'1' : DKA which controls DK308-90 is previous adapter.

*19 You can suppress reporting the HRC/HODM Service SIM to the HOST by RCU Option operation (PPRC support by HOST and Service SIM of HRC/HODM).

- Service level SIM -

PPRC support by HOST	Service SIM or HRC/HODM	level of error	HRC	HODM
Yes	Report	DKC SIM	Host Report	Host Report
		DEV SIM	Not Host Report	Host Report
	Not Report	DKC SIM	Not Host Report	Not Host Report
		DEV SIM	Not Host Report	Not Host Report
No	Report	DKC SIM	Host Report	Host Report
		DEV SIM	Host Report	Host Report
	Not Report	DKC SIM	Not Host Report	Not Host Report
		DEV SIM	Not Host Report	Not Host Report

- Moderate or Serious level SIM -

PPRC support by HOST	level of error	HRC	HODM
Yes	DKC SIM & DEV SIM (DF40/DF48)	Host Report	Host Report
	DEV SIM (except DF40/DF48)	Not Host Report	Host Report
No	DKC SIM & DEV SIM (DF40/DF48)	Host Report	Host Report
	DEV SIM (except DF40/DF48)	Host Report	Host Report

*20 Power stoppage/Shared memory is not volatiled.

- Power stoppage when subsystem is running.
- Power stoppage when subsystem is during shutdown sequence.

16.2.2 SIM Reference Codes Detected by the SVP

SIM Reference Codes Detected by the SVP

Error		REF code			SIM 28	Level of error	Host report	Remarks
		22	23	13 *12				
Environmental error	Temperature abnormal	BF	1X	XX *13	F1	Moderate	Yes	*1
	Voltage alarm	BF	2X	XX *13	F1	Moderate	Yes	*2
	Voltage warning	BF	3X	XX *13	F1	Moderate	Yes	*3
	P/S warning	BF	4X	XX *13	F1	Moderate	Yes	*4
	Battery warning	BF	5X	XX *13	F1	Moderate	Yes	*5
	AC warning	BF	6X	XX *13	F1	Moderate	Yes	*6
	Fan abnormality : CL1 logic	BF	7X	10	F1	Moderate	Yes	*7
	Fan abnormality : CL1 cache	BF	7X	11	F1	Moderate	Yes	*8
	Fan abnormality : CL2 logic	BF	7X	20	F1	Moderate	Yes	*7
	Fan abnormality : CL2 cache	BF	7X	21	F1	Moderate	Yes	*8
	Fan abnormality : HDU	BF	7X	3X~ 6X	F1	Moderate	Yes	*9
	JP remains	BF	8X	XX *13	F1	Moderate	Yes	*10
	Environment monitor error	BF	9X	XX *13	F1	Moderate	No	*11
	Environment monitor disagreement	BF	AX	XX *13	F1	Moderate	No	*12
SVP error	Logical inconsistency	70	XX	00	F1	Moderate	No	*14
	HEAP error	71	XX	00	F1	Moderate	No	*14
	File error	72	XX	00	F1	Moderate	No	*14
	LAN error	73	XX	00	F1	Moderate	No	*14
	S-SVP error	74	XX	XX *15	F1	Moderate	Yes	*14
	Windows error	75	XX	00	F1	Moderate	No	*14
	CUDG3 detected error	76	01	XX *16	F1	Moderate	No	
	LCDG3 detected error	76	10	XX *16	F1	Moderate	No	
	BOOT detected error	79	00	X0	F1	Moderate	No	X:Processor number
End status of remote microprogram exchange	Normal end	7A	00	00	F1	Service	No	
	Abnormal end (SVP)	7A	01	00	F1	Service	No	
	Abnormal end (MP)	7A	02	0X	F1	Service	No	X:Processor number
	Version check error	7A	03	XX *17	F1	Service	No	X:Micro-program type
	Sum check error	7A	04	XX *17	F1	Service	No	X:Micro-program type
	LCP patch error	7A	05	0X	F1	Service	No	X:LCP#0
	Warning (Configuration inconsistency)	7A	10	00	F1	Service	No	
	Warning (S-SVP busv)	7A	11	00	F1	Service	No	
	Warning (LCP busv)	7A	12	0X	F1	Service	No	X:LCP#0
Dump received	WCHK1 dump	30	80	X0	F1	Moderate	No	X:Processor number *18
	ABEND dump	30	81	X0	F1	Moderate	No	

*1 Contents of byte 23 when a temperature abnormality occurred

Byte 23	Error
10	Abnormal temperature in the unit of over 45 °C is detected.
11	Abnormal temperature in the unit of over 60 °C is detected.

*2 Contents of byte 23 when a voltage alarm was given

Byte 23	Error
20	5V voltage has dropped below 80%.
21	3.3V voltage has dropped below 80%.
22	12V voltage has dropped below 80%.

*3 Contents of byte 23 when a voltage warning was given

Byte 23	Error
30	Voltage for shared memory or cache memory periphery or cache memory has dropped below 80%

*4 Contents of byte 23 when a P/S warning was given

Byte 23	Error
40	5V PS 0 box abnormality has been detected.
41	5V PS 1 box abnormality has been detected.
42	5V PS 2 box abnormality has been detected.
43	3.3V PS 0 box abnormality has been detected.
44	3.3V PS 1 box abnormality has been detected.
45	Multi PS 0 box abnormality has been detected.
46	Multi PS 1 box abnormality has been detected.
47	HDD P/L Multi PS 1 box abnormality has been detected.
48	HDD P/L Multi PS 0 box abnormality has been detected.

Note : Isolate the error according to the procedure show in TRBL05-470.

*5 Contents of byte 23 when a battery warning was given

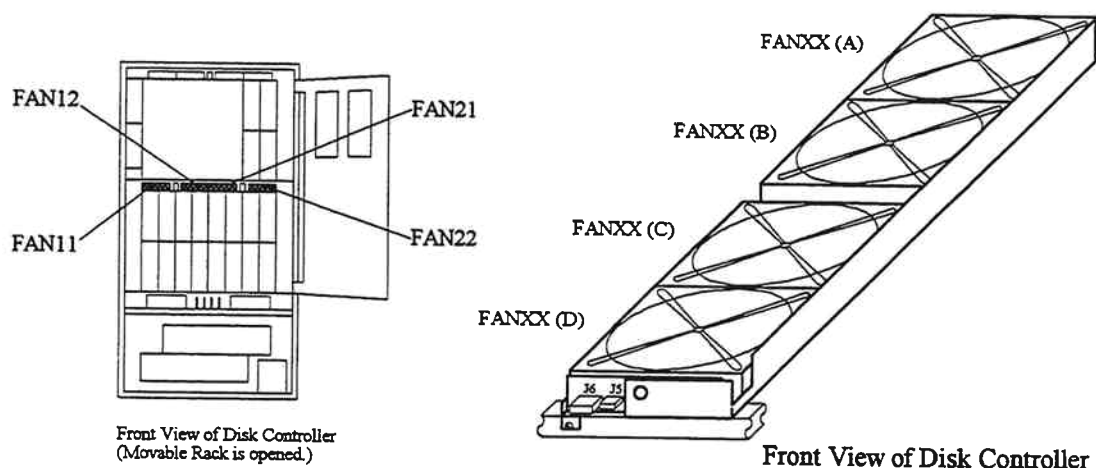
Byte 23	Byte 13	Error
50	10	BATTERY-1 or BATT CTR-1 is abnormality.
	20	BATTERY-2 or BATT CTR-2 is abnormality.
51	10	BATTERY-3 or BATT CTR-3 is abnormality.
	20	BATTERY-4 or BATT CTR-4 is abnormality.
52	11	BATTERY-3 or BATT CTR-3 is abnormality.
	21	BATTERY-4 or BATT CTR-4 is abnormality.
53	11	BATTERY-5 or BATT CTR-5 is abnormality.
	21	BATTERY-7 or BATT CTR-7 is abnormality.
54	11	BATTERY-6 or BATT CTR-6 is abnormality.
	21	BATTERY-8 or BATT CTR-8 is abnormality.

*6 Contents of byte 23 when an AC warning was given

Byte 23	Error
60	AC power off/interruption of the breaker box occurred.

*7 Contents of byte 23, 13 when a fan lock in a Logic Box occurred.

Byte 23	Byte 13	Error
70	10	Low rotation speed of FAN11 (A) has been detected.
71	10	Low rotation speed of FAN11 (B) has been detected.
76	10	Low rotation speed of FAN11 (C) has been detected.
77	10	Low rotation speed of FAN11 (D) has been detected.
72	10	Low rotation speed of FAN12 (A) has been detected.
73	10	Low rotation speed of FAN12 (B) has been detected.
78	10	Low rotation speed of FAN12 (C) has been detected.
79	10	Low rotation speed of FAN12 (D) has been detected.
70	20	Low rotation speed of FAN21 (A) has been detected.
71	20	Low rotation speed of FAN21 (B) has been detected.
76	20	Low rotation speed of FAN21 (C) has been detected.
77	20	Low rotation speed of FAN21 (D) has been detected.
72	20	Low rotation speed of FAN22 (A) has been detected.
73	20	Low rotation speed of FAN22 (B) has been detected.
78	20	Low rotation speed of FAN22 (C) has been detected.
79	20	Low rotation speed of FAN22 (D) has been detected.



*8 Contents of byte 23 when a fan lock in a Cache Box occurred.

Byte 23	Error
70	Low rotation speed of FANCX1-ASSY has been detected. (X:Cluster)
71	Low rotation speed of FANCX2-ASSY has been detected. (X:Cluster)
72	Low rotation speed of FANCX3-ASSY has been detected. (X:Cluster)
73	Low rotation speed of FANCX4-ASSY has been detected. (X:Cluster)

*9 Contents of byte 23 when a fan lock in a HDU occurred.

Byte 23	Error
70	Low rotation speed of FAN-XXX2-ASSY has been detected. (FAN-XXX:the part shown in byte 13)
71	Low rotation speed of FAN-XXX1-ASSY has been detected. (FAN-XXX:the part shown in byte 13)
72	Low rotation speed of FAN-XXX0-ASSY has been detected. (FAN-XXX:the part shown in byte 13)

*10 Contents of byte 23 when warning of JP (Jumper plug) remains was given

Byte 23	Error
81	JP for LOGIC 1 remains.
82	JP for LOGIC 2 remains.
83	JP for CACHE 1 remains.
84	JP for CACHE 2 remains.
85	JP for HDU-XX0~HDU-XX3 remains.
86	JP for HDU-XX4~HDU-XX7 remains.

*11 Contents of byte 23 when an environment monitor error occurred

Byte 23	Error
90	Environment monitor register access error
91	Basic clock error of the environment monitor PCB occurred.
92	Parity error of the environment monitor PCB occurred.

*12 Contents of byte 23 when an environment monitors disagreement error occurred

Byte 23	Error
A0	An environment monitors disagreement error occurred.
A1	An environment monitors disagreement error of P/S occurred

*13 Contents of byte 13 when an environmental abnormality error occurred

Byte 13	Error section	Byte 13	Error section
10	Logic 1	60	HDU-L20
11	Cache 1	61	HDU-L21
20	Logic 2	62	HDU-L22
21	Cache 2	63	HDU-L23
30	HDU-R10	64	HDU-L24
31	HDU-R11	65	HDU-L25
32	HDU-R12	66	HDU-L26
33	HDU-R13	67	HDU-L27
34	HDU-R14	70	DKUMN-R1F
35	HDU-R15	71	DKUMN-R1R
36	HDU-R16	72	DKUMN-L1F
37	HDU-R17	73	DKUMN-L1R
40	HDU-L10	74	DKUMN-R2F
41	HDU-L11	75	DKUMN-R2R
42	HDU-L12	76	DKUMN-L2F
43	HDU-L13	77	DKUMN-L2R
44	HDU-L14	80	PWRCTL-1
45	HDU-L15	81	PWRCTL-2
46	HDU-L16	90	AC BOX-R10
47	HDU-L17	91	AC BOX-R11
50	HDU-R20	-	-
51	HDU-R21	-	-
52	HDU-R22	-	-
53	HDU-R23	-	-
54	HDU-R24	-	-
55	HDU-R25	-	-
56	HDU-R26	-	-
57	HDU-R27	-	-

*14 Contents of byte 23 when a logical error, a HEEP error, a file error, a LAN error or Windows error occurred
Byte 23

Byte 23	Error
0X00	Dump task
0X01	DKU inline
0X02	Microprogram change (online)
0X03	Information
0X04	LOGOUT
0X05	PATH inline
0X06	Back Ground
0X07	DIAG
0X08	Install
0X09	Online
0X0A	Microprogram change (offline)
0X0B	Special PCB maintenance
0X0C	Common communication function
0XEF	Other AP

***15 Contents of byte 23 and byte 13 when a S-SVP logical error occurred**

Byte 23

S-SVP error code (High byte)

Byte 13

S-SVP error code (Low byte)

***16 Contents of byte 13 when a CUDG detection error occurred**

Byte 13 (bit 0 - bit 3)	MPID
0000	CHP0
0001	CHP1
0010	CHP2
0011	CHP3
0100	CHP4
0101	CHP5
0110	CHP6
0111	CHP7
1000	DKP8
1001	DKP9
1010	DKPA
1011	DKPB
1100	DKPC
1101	DKPD
1110	DKPE
1111	DKPF

Byte 13 (bit 4 - bit 8)	Section
0001	CHA
0010	DKA
0011	CACHE+Shared Memory
0100	CACHE PORT+Shared Memory
0101	CACHE

***17 Contents of byte 13 when a version check error or sum check error occurred**

Byte 13	Micro-program type
00	RAM BOOT
01	DKC MANI
02	LCP
03	MCP
04	LCDG
05	DKU
06	SVP
07	S-SVP

***18** In WCHK1 dump and ABEND dump received SIM = 3080X0, 3081X0, the system error code is indicated on the SIM log detail screen in the format [YYYY] as in Reference Code 3080X0[YYYY].

16.3 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'000000'							
4								
5								
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 (Note 1)				Range affected by repair (Note 2)			
9	Level of error (Note 3).		Number of faulty SPs (Note 4)	Number of SPs in SSID (Note 5)	Number of faulty SSIDs (Note 6)	Number of affected SSIDs (Note 7)	Status (Note 8)	0
10	Resend SIM (Note 9)	('0000000')						
11	Hardware level (Note 10)							
12	Hardware level (Note 10)							
13	Isolation code (Note 11)							
14	SSB ID (Note 12)	SIM sequence number (SIM log record #)						SVP ID (Note 13)
15	DKC serial number (x'0C6900'+DKC sequence number)							
16								
17								
18								
19								
20	SSID of self subsystem							
21	Symptom code (Note 14)							
22								
23								
24	Logging and Message Control (Note 15)							
25	Program action code (x'10')							
26	Dual Frame	EDCC Mode	'00'		Nonsynchronous operation	Serial channel	Report output (1)	'0'
27	'0'	'0000'				Extension path configuration	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'000000'							
4								
5								
6								
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 (Note 1)				Range affected by repair (Note 2)			
9	Level of error (Note 3)		Number of faulty SPs (Note 4)	Number of SPs in SSID (Note 5)	Number of faulty SSIDs (Note 6)	Number of affected SSIDs (Note 7)	Status (Note 8)	0
10	Resend SIM (Note 9)	('0000000')						
11	Hardware level (Note 10)							
12	Hardware level (Note 10)							
13	Isolation code (Note 11)							
14	SSB ID (Note 12)	SIM sequence number (SIM log record #)						SVP ID (Note 13)
15	DKC serial number (x'0C6900'+DKC sequence number)							
16								
17								
18								
19								
20	SSID of self subsystem							
21	Symptom code (Note 14)							
22								
23								
24	Logging and Message Control (Note 15)							
25	Program action code (x'10')							
26	Dual Frame	EDCC Mode	'00'		Nonsynchronous operation	Serial channel	Report output	'0'
27	'0'	'0000'				Extension path configuration	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 (Note 12)	SIM Sequence ID						SVP ID (Note 13)
8	Device Exception (x'1')				Service Message (Note 16)			
9	Level of error (Note 3)		'000000'					
10	Resend SIM (Note 9)	('0000000')						
11	Exception Class Fru List Code (x'80')							
12	Hardware and Microcode Corequisite Indicator (x'01')							
13	Device Address (See reference code)							
14	Action Flag (x'05')							
15	Drive serial number (x'0C69'+DKU sequence number)							
16								
17								
18								
19								
20	SSID of self subsystem							
21	Symptom code (Note 14)							
22								
23								
24	Logging & Message Control (Note 15)							
25	Program Action Code (x'10')							
26	Dual Frame	EDCC Mode	x'0'	x'0'	Nonsynchronous operation	Serial Channel	'1'	'0'
27	x'0'				x'0'	Extention path configuration	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 (Note 12)	SIM Sequence ID						SVP ID (Note 13)
8	Device Exception (x'1')				Service Message (x'1')			
9	Level of error (Note 3)		Media Maintenance Procedure Number (correctable: x'07', uncorrectable: x'05')					
10	Resend SIM (Note 9)	('0000000')						
11	Exception Class Fru List Code (x'80')							
12	Hardware and Microcode Corequisite Indicator (x'01')							
13	Device Address (See reference code)							
14	Correctable: x'87', uncorrectable: x'85'							
15	Drive serial number (x'0C69'+DKU sequenc number)							
16								
17								
18								
19								
20	SSID of self subsystem							
21	Symptom code (Note 14)							
22								
23								
24	Logging & Message Control (Note 15)							
25	Program Action Code (x'10')							
26	Dual Frame	EDCC Mode	x'0'	x'0'	Nonsynchronous operation	Serial Channel	'1'	'0'
27	x'0'				x'0'	Extention path configuration	Storage path	
28	x'FF'							
29	Cylinder Address High							
30	Cylinder Address Low							
31	Head Address							

Notes:

1. Range subject to the error

(1) When byte 28 is x'F1' (DKC 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

(2) 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

(1) When byte 28 is x'F1' (DKC 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

(2) 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': Unresent SIM

B'1': Resent SIM

10. Hardware level

Bit 0: ESCON hardware level

When bit 0 is 0:

Bit 1: Not used
 Bits 2-3: Report storage path
 Bits 4-5: Number of channels per cluster
 B'00' = 4
 B'01' = 8
 B'10' = Not used
 B'11' = Not used
 Bit 6: NVS
 B'0' = No NVS
 B'1' = NVS provided
 Bit 7: Not used
 Bits 8-10: Cache size
 000: Non cache
 001: 256MB
 010: 512MB
 011: 768MB
 100: 1024MB
 101: 1280MB
 110: 1536MB
 111: Over 1536MB
 Bits 11-13: Cluster hardware level
 Bits 14-15: Cache/NVS hardware level

When bit 0 is 1:

Bit 1: Not used
 Bits 2-3: Error storage path
 Bits 4-7: Number of channels per cluster
 0000: Metal = 4, ESCON = 0
 0001: Metal = 8, ESCON = 0
 0010: Metal = 4, ESCON = 2
 0100: Metal = 4, ESCON = 4
 0110: Metal = 0, ESCON = 2
 1000: Metal = 0, ESCON = 4
 1010: Metal = 0, ESCON = 8
 1100: Metal = 0, ESCON = 6
 Bit 8: Dual frame
 0: Dual frame
 1: Modular power
 Bits 9-11: Cache size
 000: Non cache
 001: 256MB
 010: 512MB
 011: 768MB
 100: 1024MB
 101: 1280MB
 110: 1536MB
 111: Over 1536MB
 Bits 12-13: Cluster hardware level
 Bits 14-15: Cache/NVS hardware level

11. Isolation code

Byte 13 ≠ X'00' Bytes 22 and 23 are a symptom code.

Byte 13 = X'00' Bytes 22 and 23 are an isolation code. This byte is byte 2 of the association code.

12. SSB ID

B'0' = SVP

B'1' = SP

13. SVP ID

B'0' = SVP1

B'1' = SVP2

14. Symptom code

See bytes 22 and 23 of the reference codes listed in Sections 5.2 and 5.3.

15. Logging and Message control

Bit 0 - 3: Not used

Bit 4 - 5: Logging

B'00': Do not 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

16. Service Message

x'1': Action

x'C': No action