## 4.6.2.20. SCCP Local Subsystem State Data Display

Function to display State related to Local Exchange Sub-system defined at Local

Exchange Signaling Point

Command DIS-SCCP-LSS:BSC\_ID =a;

a = BSC Number (  $00 \sim 16$  )

Input DIS-SCCP-LSS:BSC\_ID = 0;

Output

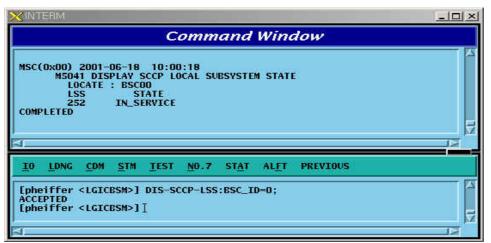
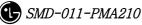


Fig. 4.6-20 SCCP Local Subsystem State Data Display

## 4.6.2.21. Signaling Link Status Display

Function to display a designated Signaling Link Status, Activate Status of Signaling Link, Inhibit Status of Intra switching office Signaling Link, and Inhibit Status of local Switching Office.

Command DIS-SLK-STS:BSC\_ID = a, SLC = b; a = BSC Number (00 ~ 11) b = Signalling Number Code (00 ~ 16) Input DIS-SLK-STS:BSC\_ID = 0, SLC=0; Output



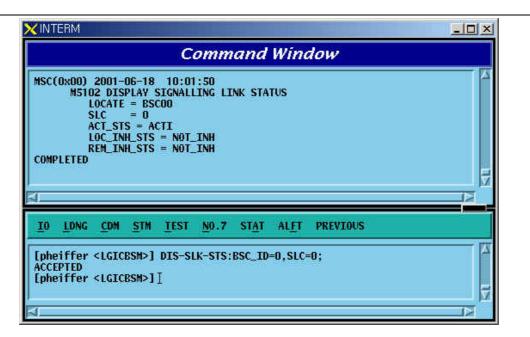


Fig. 4.6-21 Signaling Link Status Display

## 4.6.2.22. Signaling Terminal Status Display

Function to display Status Information for a specific signaling Tunnel, including the types of data such as SLC, Trunk Number, Signaling Data Link Number, and present Status.

Command DIS-ST-STS:BSC\_ID=0;

a = BSC Number ( 00 ~ 15 )

Input DIS-ST-STS:BSC\_ID=0;

	15103 C	ISPLAY	8 10:02 SIGNAL		RMINAL	STATU	s	
COMPLET	ST_1 001 002 003 004		SCUU SLC 32 1 2 *****	NOF NOF	STS MAL MAL MAL MAL			
IO TO	ING <u>C</u> I	DM <u>s</u> tn	1 <u>T</u> est	<u>N</u> 0.7	STAT	AL <u>F</u> T	PREVIOUS	<u> </u>
CCEPTI	D	ICBSM>	] dis-s ][	T-STS:E	SC_ID=	0;		

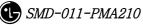


Fig. 4.6-22 Signaling Terminal Status Display

## 4.6.2.23. Signaling Link Set Status Display

Function to display all the Signaling Link Status connected to ASS-W to include the status of SLC(Signaling Link Code), sl\_avail(Signaling Link Availability/Non-availability), loc\_inh(Local Exchange Management Inhibit), rem\_inh(Remote Management Inhibit).

Command DIS-LKS-STS:BSC\_ID=a;

a = BSC Number ( 00  $\sim$  11 )

Input DIS-LKS-STS:BSC\_ID = 0;

Output

			С	omm	and	Wind	dow	
		ISPLAY S E = BSCO	SIGNALL	ING LI LO NO NO	NKSET C_INH_ T_INH T_INH T_INH		REM_INH_STS NOT_INH NOT_INH NOT_INH NOT_INH	
ĪŪ	LDNG C	M <u>s</u> tm	<u>T</u> EST	<u>N</u> 0.7	ST <u>A</u> T	AL <u>F</u> T	PREVIOUS	
ACC	eiffer <lg EPTED eiffer <lg< td=""><td></td><td></td><td>S-STS:</td><td>BSC_ID</td><td>=0;</td><td></td><td></td></lg<></lg 			S-STS:	BSC_ID	=0;		

Fig. 4.6-23 Signaling Link Set Status Display

## 4.6.2.24. MTP Level 2 Timer Display

It displays Timer Value used for MTP L2 which is presently in operation.

Command DIS-MTP2-TMR:BSC\_ID = a; a = BSC Number ( 00 ~ 15 ) Input DIS-MTP2-TMR:BSC\_ID = 0; Output

	Command Window	
ISC(0x00) 2001-06-18 M5200 DISPLAY LOCATE T1 TIMER T2 TIMER T3 TIMER T4n TIMER T4n TIMER T4e TIMER T5 TIMER T5 TIMER T6 TIMER T7 TIMER RESULT COMPLETED		
<u>IO LDNG CDM STM</u> CCEPTED pheiffer <lgicbsm>] CCEPTED pheiffer <lgicbsm>]</lgicbsm></lgicbsm>	<u>TEST NO.7 STAT ALET PREVIOUS</u> DIS-MTP2-TMR:BSC_ID=0; I	

Fig. 4.6-24 MTP Level2 Timer Display

## 4.6.2.25. MTP Level 2 Timer Change

It changes Timer Value used for MTP L2 which is presently in operation.

```
Command CHG-MTP2-TMR:BSC_ID=a, T1=b, T2 =c, T3=d, T4N = e, T4E = f,

T5 =g, T6 = h, T7= i;

a = BSC Number (00 \sim 15)

b = T1 Timer (40000 \sim 50000)

c = T2 Timer (5000 \sim 150000)

d = T3 Timer (1000 \sim 2000)

e = T4N Timer (7500 \sim 9500)

f = T4E Timer (00 \sim 600)

g = T5 Timer (80 \sim 120)

h = T6 Timer (3000 \sim 5000)

I = T7 Timer (500 \sim 2000)

Input CHG-MTP2-TMR:BSC_ID=0, T5 = 100;

Output
```

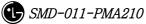
	Command Window	
ISC(0x00) 2001-06-18 M5201 Change M LOCATE T1 TIMER T2 TIMER T3 TIMER T4n TIMER T4n TIMER T4e TIMER T5 TIMER T5 TIMER T6 TIMER T7 TIMER RESULT		
IO LDNG CDM STM	TEST NO.7 STAT ALFT PREVIOUS	<u>1</u> 2
	CHG-MTP2-TMR:BSC_ID=0,T5=100;	

Fig. 4.6-25 MTP Level2 Timer Change

## 4.6.2.26. MTP Level 3 Timer Diplay

It displays Timer Value used for MTP L3 which is presently in operation.

Command DIS-MTP3-TMR:BSC\_ID =a; a = BSC Number ( 00 ~ 15 ) Input DIS-MTP3-TMR:BSC\_ID = 0; Output



MSC(0x00) 2001-06-18 10:04:58 MS202 DISPLAY MIP L3 TIMER LOCATE = BSC00 T1 TIMER = 1000 msec T2 TIMER = 2000 msec T3 TIMER = 1000 msec T4 TIMER = 1000 msec T12 TIMER = 1000 msec T13 TIMER = 1000 msec T14 TIMER = 2000 msec T17 TIMER = 2000 msec T17 TIMER = 240 sec T23 TIMER = 240 sec SLIM TIMER = 005 sec RESULT = 0K COMPLETED		Command Window	
	M5202 DISPLAY I LOCATE T1 TIMER T2 TIMER T3 TIMER T4 TIMER T12 TIMER T13 TIMER T13 TIMER T14 TIMER T14 TIMER T22 TIMER T23 TIMER SLTM TIMER RESULT	ATP       L3       TIMER         =       BSC00       =         =       1000       msec         =       2000       msec         =       2000       msec         =       2000       msec         =       2000       msec         =       240       sec         =       240       sec         =       005       sec	
IO LONG COM STM TEST NO.7 STAT ALET PREVIOUS	IO LONG COM STM	TEST NO.7 STAT ALET PREVIOUS	

Fig. 4.6-26 MTP Level3 Timer Display

#### 4.6.2.27. MTP Level 3 Timer Change

It changes Timer Value used for MTP L3 which is presently in operation.

```
CHG-MTP3-TMR:BSC_ID = a, T1 = b, T2 = c, T3 = d, T4 = e, T5 =
Command
f, T12 = g, T13= h, T14 = i, T17 = j, T22 = k, T23 = l, SLTM = m;
       a = BSC Number (00 ~ 11)
       b = T1 Timer ( 500 ~ 1200 )
       c = T2 Timer ( 700 ~ 2000 )
       d = T3 Timer ( 500 ~ 1200 )
       e = T4 Timer ( 500 ~ 1200 )
       f = T5 Timer (500 \sim 1200)
       g = T12 Timer (800 ~ 1500)
       h = T13 Timer ( 800 ~ 1500 )
       I = T14 Timer ( 2000 ~ 3000 )
       j = T17 Timer ( 800 \sim 5000 )
       l = T22 Timer ( 180 ~ 360 )
       l = T23 Timer ( 180 ~ 360 )
       m = SLTM Timer ( 4 \sim 12 )
       CHG-MTP3-TIMER:BSC_ID=0, SLTM=10;
Input
```



C(0x00) 2001-06-18 M5203 CHANGE MI LOCATE T1 TIMER T2 TIMER	= BSC00			
T3 TIMER T4 TIMER T5 TIMER T12 TIMER T13 TIMER T14 TIMER T14 TIMER T17 TIMER T22 TIMER T23 TIMER SLTM TIMER RESULT DMPLETED	= 1000 msec = 2000 msec = 1000 msec = 1000 msec = 1000 msec = 1000 msec = 2000 msec = 2000 msec = 240 sec = 240 sec = 240 sec = 010 sec = 0K			
O LONG COM STM	<u>T</u> EST <u>N</u> 0.7 S	T <u>A</u> T AL <u>F</u> T	PREVIOUS	

Fig. 4.6-27 MTP Level e 3 Timer Change

## 4.6.2.28. SCCP Timer Display

It changes Timer Value used for SCCP which is presently in operation.

```
Command CHG-SCCP-TMR:BSC_ID=a, T_CONNE_EST = b, T_IAS = c, T_IAR =
d, T_REL = e, T_INT =f, T_STAT_INFO = g;
a = BSC Number ( 00 ~ 11 )
b = T_CONNE_EST ( 20 ~ 120 )
c = T_IAS ( 300 ~ 600 )
d = T_IAR ( 660 ~ 1320 )
e = T_REL ( 1 ~ 20 )
f = T_INT ( 10 - 60)
g = T_STAT_INFO ( 5 ~ 1200 )
Input CHG-SCCP-TMR:BSC_ID=0, T_STAT_INFO=40;
Output
```

		Са	omm	and	Wind	dow	
	T_IAS T_IAR T_REL T_INT		ER DO SEC SEC SEC SEC SEC				
ĪÛ	LDNG CDM S	TM <u>t</u> est	<u>N</u> 0.7	STAT	AL <u>F</u> T	PREVIOUS	
ACCE	eiffer <lgicbs PTED eiffer <lgicbs< td=""><td></td><td>CP-TMR</td><td>:BSC_I</td><td>D=0,T_9</td><td>STAT_INFO=40;</td><td></td></lgicbs<></lgicbs 		CP-TMR	:BSC_I	D=0,T_9	STAT_INFO=40;	

Fig. 4.6-28 SCCP Timer Change

# **4.6.3. Maintenance Function Command**

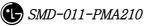
## 4.6.3.1. Signaling Link Test

Signaling Link Test is performed while Signaling Link is in service when Signaling Link becomes activated or restored and is used to check if both ends of Signaling Link process messages correctly. The status of Signaling Link to be tested should be in the Activate Status.

```
Command TEST-SLK:BSC_ID=a, SLC =b;
a = BSC Number ( 0 ~ 11 )
```

b = Signalling Link Code (  $0 \sim 15$  )

Input TEST-SLK:BSC\_ID= 0, SLC = 1;



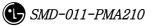
		Comman	d Window	
	0x00) 2001-06- M5100 TEST 9 LOCATE = SLC = RESULT = LETED	IGNALLING LINK BSCOO 1		
	LONG COM S	IM <u>t</u> est <u>N</u> 0.7 st <u>j</u>	<u>A</u> T AL <u>F</u> T PREVIOUS	
ĪŪ				12

Fig. 4.6-29 Signaling Link Test

## 4.6.3.2. Signaling Terminal Test

Signaling Terminal Test consists of RA Loopback and SELF Loopback, and RA Loopback performs Loopback in Rate Adaptation function, performing an activation of Signaling Link. Depending upon the result, it performs inspection function on the Signaling Terminal and Lookback performs Lookback to STPA receiving terminal, providing inspection function of Status. A test should be successfully conducted to Signaling Terminal where corresponding Signaling Terminal is not allocated to Signaling Link before testing Signaling Terminal, so that normal test result can be reported.

Command TEST-ST:BSC\_ID=a, STID =b, TYPE=c; a = BSC Number (00 ~ 11) b = Signalling Terminal (1 ~ 16) c = TYPE (SELF, RA) Input TEST-ST:BSC\_ID = 1, STID =2, TYPE=SELF; Output



Command Wind	dow
MSC(0x00) 2001-06-18 10:33:59 M5101 TEST SIGNALLING TERMINAL LOCATE = BSC01 STID = 2 TYPE = SELF RESULT = OK COMPLETED	
	PREVIOUS
<u>IO LONG COM STM TEST NO.7 STAT ALFT</u>	

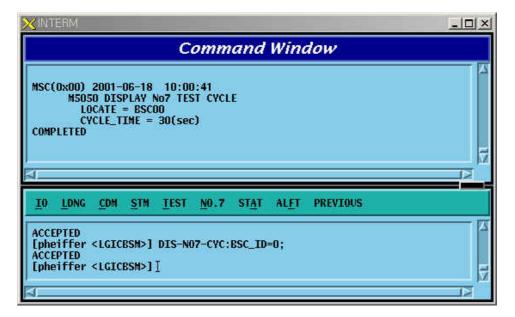
Fig. 4.6-30 Signaling Terminal Test

## 4.6.3.3. Test Cycle Display

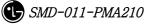
Signaling Terminal Automatic Test is not a test on the request from the operator to Signaling Terminal allocated to Signaling Link, but the test is performed on Signaling Terminal by the Processor cyclically, which displays Test Cycle (default: 30sec). Command DIS-NO7-CYC:BSC\_ID=a;

a = BSC Number ( 00 ~ 11 )

Input DIS-NO7-CYC:BSC\_ID = 0;







### 4.6.3.4. Test Cycle Change

It is used to change Test Cycle which is performed by Processor (SCP).

Command CHG- NO7-CYC:BSC\_ID=a, CYC=b;

a = BSC Number (  $00 \sim 11$  )

 $b = Cycle (00 \sim 120)$ 

Input CHG-NO7-CYC:BSC\_ID=0, CYC=35;

Display

Command Window	
MSC(0x00) 2001-06-18 10:01:22 M5051 CHANGE NO7 TEST CYCLE LOCATE = BSC00 RESULT = 0K COMPLETED	
IO LONG COM STM IEST NO.7 STAT ALET PREVI	OUS
ACCEPTED	

Fig. 4.6-32 Test Cycle Change

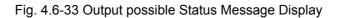
### 4.6.3.5. Inhibited Status Message Display

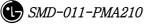
It displays Status Message that can be displayed at present.

Command DIS-INH-NO7;

Input DIS-INH-NO7;

				C	omm	and	Wind	tow	
	(0×00) M5600 PLETED	DISP	LAY I	10:11 HIBITE INHIBJ	D STAT	US			
ĪÛ	LDNG	<u>C</u> DM	<u>s</u> tm	<u>T</u> EST	<u>N</u> 0.7	STAT	ALET	PREVIOUS	
ACCI	eiffer EPTED eiffer				₩-N07;				





## 4.6.3.6. Status Message Display Allow

It allows to display Status Message on Outterm.

Command ALW-NO7-MSG:SN=a;

a = Status Number ( ALL, S5000, S5001, S5010, S5011, S5012, S5013, S5020, S5021, S5022, S5023, S0524, S5025, S5026, S5027, S5028, S5030, S5031, S5032 ) Input ALW-N07-MSG:SN=S5000;

Output

× INTERM	
Command Window	
MSC(0x00) 2001-06-18 10:12:56 MS601 ALLOW STATUS MESSAGE : SN = S5000 RESULT = ALLOWED COMPLETED	
IO LONG COM STM TEST NO.7 STAT ALET PREVIOUS	
[pheiffer <lgicbsm>] ALW-N07-MSG:SN=S5000; ACCEPTED [pheiffer <lgicbsm>]</lgicbsm></lgicbsm>	N N N N N N N N N N N N N N N N N N N

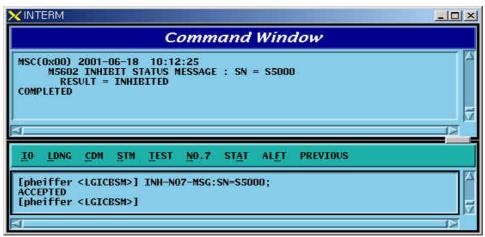
Fig. 4.6-34 Status Message Display Allowed

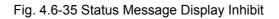
## 4.6.3.7. Status Message Display Inhibit

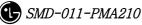
It inhibits to display Status Message on Outterm

Command INH-NO7-MSG:SN= a

a = Status Number ( ALL, S5000, S5001, S5010, S5011, S5012, S5013, S5020, S5021, S5022, S5023, S0524, S5025, S5026, S5027, S5028, S5030, S5031, S5032 ) Input INH-N07-MSG:SN=S5000;







# 4.7. Statistics Command

Apart from switching system, statistics Function in BSM measures performance and load and reports them to NMS(Network Management System), a center for selfreporting and network management. The function of statistics is divided logistically into three. The first one is that On Demand statistics items that the user measures designated statistics item and BTS on the arbitrary time for the specific cycles.

And additionally to be included is Hourly Statistic that collects, without complying with the user's request, all the statistics always on time for reporting to NMS. Lastly, it is divided into On Line Statistics that collects and sends statistics every 5 minutes so that NMS can confirm on a real time basis. The following commands in series are mainly related to On Demand Statistics, and Hourly Statistics function was configured, in consideration of BMS performance to display on request only from user.

On Demand Statistics function is used only when the user wants to check performance related data with specific BSC or BTS. For Hourly Statistics function, once statistics report is requested CCP, BSP, PCP, NCP and CNP that are major processors at every fixed time, all kinds of statistics collected are gathered at the corresponding processor and transferred. Section between BSM and BSS are connected to STM-1, but because the volumes of the collected statistics are so huge that they are executed for 15 minutes.

That is, the report of statistics data to NMS is made at 15 minutes after the every hour. BSM becomes to keep hourly statistics data. Storages are made on an hourly basis for a week and are stored in binary in PKG/DATA/STAT/HOURLY. Reports to NMS are made by the reporting method of ASCII and the method providing Binary and Library at the user's request.

Division	Content	Statistics Commands
	Traffic	STAT-TRAF:DIR=a,OPTION=b,BSC=c,BTS=d
Traffic		[,MPRD=e, MTIM=f];
Related	Hourly Traffic	DIS-HLY-TRAF:HOUR=a,OPTION=b,BSC=c,BTS=d;
	Daily Traffic	DIS-DLY-TRAF:WEEK=a,HOUR=b,OPTION=c,BSC=d,BTS=e;
Hand off	Hand off (all)	STAT-HOFF:BSC=a,BTS=b[,MPRD=c, MTIM=d];
Related	Softer Handoff	<pre>STAT-HOFF-SOFTER:BSC=a[,BTS=b,MPRD=c, MTIM=d];</pre>

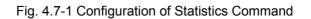
Table 4.7-1Statistics Command List

<u> </u>								
	Soft Handoff	STAT-HOFF-SOFT:BSC=a[,BTS=b,MPRD=c, MTIM=d];						
	Hard Handoff	<pre>STAT-HOFF-HARD:BSC=a[,BTS=b,MPRD=c, MTIM=d];</pre>						
Call Related	Channel Element	<pre>STAT-CE:BSC=a[,BTS=b,MPRD=c, MTIM=d];</pre>						
	Vocoder	<pre>STAT-VOC:BSC=a,VMP=b[,VCP=c,MPRD=d, MTIM=e];</pre>						
	Network	STAT-						
		NET:CAN=a,BSC=b[,BTS=c,ITEM=d,MPRD=d,MTIM=e];						
	Radio Channel	<pre>STAT-CH:BSC=a[,BTS=b,MPRD=c,MTIM=e];</pre>						
	Processor	<pre>STAT-PRC:CAN=a,BSC=b[,BTS=c,MPRD=d,MTIM=e];</pre>						
	Selector	STAT-SLT:BSC=a,SMP=b[,SLP=c,MPRD=d,MTIM=e];						
	BTS Performance	STAT-PERF:BSC=a[,BTS=b,MPRD=c,MTIM=d];						
	Paging	STAT-PAGE:BSC=a[,BTS=b,MPRD=c,MTIM=d];						
	CAI Signaling	STAT-CAI:ITEM=a,BSC=b[,BTS=c,MPRD=d, MTIM=e];						
	N07	STAT-N07:ITEM=a,SCP=b[,MPRD=c,MTIM=d];						
	Round Trip Delay	<pre>STAT-RTD:BSC=a,BTS=b[,MPRD=c,MTIM=d];</pre>						
	RF Min/Max	STAT-RF:BSC=a,BTS=b,ITEM=c[,MPRD=d,MTIM=e];						
	Packet Data	STAT-PKD:PCP=a,SHELF=b[,PIP=c,MPRD=d,MTIM=e];						
Packet	Packet Control	<pre>STAT-PKC:PCP=a[,MPRD=b, MTIM=c];</pre>						
Related	Packet Handoff	<pre>STAT-PCP:PCP=a[,MPRD=b, MTIM=c];</pre>						
	Statistic List	DIS-STAT-ITEM;						
	Statistics Job	DIS-STAT-JOB;						
	Statistics Stop	CAN-STAT:[BSC=a,]JOB=b;						
	Hourly Statistic	DIS-HLY-DATA:HOUR=a,ITEM=b,BSC=c[,BTS=d];						
Others	Display							
	Daily Statistics	DIS-DLY-DATA:WEEK=a,HOUR=b,ITEM=c,BSC=d[,BTS=e];						
	Display							
	Online Cycle	CHG=ONLINE-MPRD[:MPRD=a];						
	Change							
	Unanye							

Display of Hourly/Daily Statistics for the same item of statistics is identical to On Demand Statistics. It is not related to Processor or Device that measures and reports statistics, but is related only to equip of PLD.

This function of statistics is consisted of 5 Categories to include Traffic, Handoff, Call related, Packet related and others, and in the window of user's command the following is displayed.

<u>1</u> 0	<u>L</u> DNG	<u>C</u> DM	<u>s</u> tm	TEST	<u>N</u> 0.7	ST <u>A</u> T AL <u>F</u> T PI	REVIOUS	·
[ypc	hoi <l< td=""><td>GICBS</td><th>₩&gt;][</th><th></th><td></td><td>Traffic_Statis Hand_Off_Statis Call_Statistics</td><th>istics 🕨</th><td></td></l<>	GICBS	₩>][			Traffic_Statis Hand_Off_Statis Call_Statistics	istics 🕨	
						Packet_Statist		ظ



# 4.7.1. Traffic related Statistics Command

Traffic Statistics is differentiated as follows:

🔽 Untitled 🔀
Command for Traffic Statistics (STAT-TRAF)
Display Hourly Traffic Data (DIS-HLY-TRAF)
Display Daily Traffic Data (DIS-DLY-TRAF)

Fig. 4.7-2 Traffic Statistics Function

### 4.7.1.1. Traffic Statistics by Service Option

This is a function which for originating call and terminating call, reports and displays the number of attempt by service option, number of success, number of failure and the collected content by reason of a failure by CCP to BSM, and for Statistics Data, collection is made by the separated each item of Service Option/Direction/ BSC/BTS/FA/SECTOR..

- Command : STAT-TRAF:DIR=a,OPTION=b,BSC=c,BTS=d[,MPRD=e,MTIM=f];
  - a : DIR : ALL Measuring all of originating calls and terminating calls ORG - Measuring originating only

TRM – Measuring terminating call only

b: OPTION :

8K voice
8K EVRC
Asynchronous Data(9.6 kbps)
Group 3 FAX(9.6 Kbps)
Short Message Service

PPP_PKT	Packet Data
ASYNC_13K	Asynchronous Data(14.4 kbps)
G3FAX_13K	Group 3 FAX(14.4 kbps)
SMS_13K	Short Message(Rate Set 2)
PPP_PKT_13K	Packet Data 13kbps
VOICE_13K	13K voice (IS-96)
PKT_TYPE1_22	High Speed Packet Data Services
PKT_TYPE2_25	High Speed Packet Data Services
PACKET_144K	144kbsps Packet Data
c: BSC : BSC number ( $0 \sim 11$ )	
d: BTS : BTS number ( $0 \sim 47$ )	
e: MPRD : Cycle (min) ( default : 30min	)
f:MTIM:Repeat frequency(default:4	times )

• Display result

🗙 INTERM						_								
	Ca	omman	d Wind	dow										
MSC(0x00) 2001-06- M7001 STATI STM = 10 : RESULT = 0K	STICS ON ( 26, MPRD	CALL TRAFI	FIC BY SE [M = 1/1	RVICE OPT	EON									
BSC = 00														
BTS = 00														
OPTION = VA	RI_VOICE													
SECTOR ID =	ALPHA													
ITEM = ORIG	INATION													
FA	0	1	2	3	4	5								
ATTEMPT	1	0	0	0	0	0								
SEIZURE	0	0	0	0	0	0								
CALL_DROP TRAFFIC	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00								
AVG_HOLD	0.00	0.00	0.00	0.00	0.00	0.00								
NOR_REL	Ō	Ō	Ō	Ō	Ō	Ō								
BAD_FR	0	0	0	0	0	0								
MS_SLP_TO	0	0	0	0	0	0								
ACQFAIL	0	0	0	0	0	0								
TCE_SLP_TO	0 0	0	0	0	0 0	0								
SO_REJ VOC_ERR	U 0	U 0	0 0	U 0	U N	0 0								
TC_FAIL	ŏ	ŏ	Ŭ	ŏ	ŏ	ŏ								
TC_UNAV	ŏ	ŏ	ŏ	ŏ	ŏ	ŏ								
TC_PWR_FAIL	Ō	Ō	Ō	Ō	Ō	Ō								
VOC_UNA	0	0	0	0	0	0								
CCP_SLT_T0	0	0	0	0	0	0								
CCP_VOC_TO	0	0	0	0 0	0	0								
CCP_NCP_T0 CCP_NCP_T0	0 0	0 0	0 0	U 0	0 0	0 0								
TRM_REL	ŏ	ŏ	ŏ	ŏ	ŏ	ŏ								
BSP_REJ	ŏ	ŏ	ŏ	ŏ	ŏ	ŏ								
SCCP_FAIL	1	Ō	0	0	Ō	0								
CCP_PCP_T0	0	0	0	0	0	0								
PCP_FAIL	0	0	0	0	0	0								
SEL_ERR SEL_UNA	0 0	0 0	0 0	0	0 0	0 0								

#### Fig. 4.7-3 Traffic Statistics Data Display Result

(\*) Reference to Appendix for description of each item in the above Fig..

## 4.7.1.2. Hourly Traffic Statistic DISPLAY

Function that inquires about the traffic statistics collected on hourly basis by BSC, BTS and service option by every hour.

• Command : DIS-HLY-TRAF:HOUR=a, OPTION=b, BSC=c, BTS=d;

- a: HOUR : Time
- b: OPTION : Service option
- c: BSC : BSC number
- d : BTS : BTS number

INTERM	<u> </u>		nd Wind	daw		[									
	<i>Li</i>	mmun	ia wini	low											
MSC(0x00) 2001-06-1 M7001 Statis Result = 0K			A HOURLY I	REPORT											
TIME : Mon :	TIME : Mon Jun 18 00:00:19 2001														
BSC = 00	BSC = 00														
<b>BTS = 00</b>															
OPTION = VA	RI_VOICE														
SECTOR ID =															
ITEM = ORIG	INATION														
FA	0	1	2	3	4	5									
ATTEMPT SEIZURE	0	0	0	0	0	0									
CALL_DR0P	Ō	Ō	Ō	Ō	Ō	Ō									
TRAFFIC	0.00	0.00	0.00	0.00	0.00	0.00									
AVG_HOLD NOR_REL	0.00 0	0.00 0	0.00 0	0.00 0	0.00 0	0.00 0									
BAD_FR	Õ	0	0	0	0	0									
MS_SLP_TO	0	0	0	0	0	0									
ACQFAIL TCE_SLP_TO	0 0	0 0	0 0	0 0	0 0	0 0									
SO_REJ	ŏ	ŏ	ŏ	ŏ	ŏ	ŏ									
VOC_ERR	Ō	Ō	Ō	Ō	Ō	Ō									
TC_FAIL	0	0	0	0	0	0									
TC_UNAV TC_PWR_FAIL	0 0	0 0	0 0	0 0	0 0	0 0									
VOC_UNA	ŏ	ŏ	ŏ	ŏ	ŏ	ŏ									
CCP_SLT_T0	Ō	Ō	Ō	Ō	Ō	Ō									
CCP_V0C_T0	0	0	0	0	0	0									
CCP_NCP_T0 CCP_NCP_T0	0 0	0 0	0 0	0 0	0 0	0 0									
TRM_REL	ŏ	ŏ	ŏ	ŏ	ŭ	Ŭ									
BSP_REJ	ŏ	ŏ	Ō	ŏ	ŏ	ŏ									
SCCP_FAIL	0	0	0	0	0	0									
CCP_PCP_T0 PCP_FAIL	0 0	0 0	0 0	0 0	0 0	0 0									
SEL_ERR	0	0	0	0	0	0									
SEL_UNA	ŏ	ŏ	ŏ	ŏ	ŏ	ŏ									
							7								
						0	-								

#### Fig. 4.7-4 Hourly Traffic Statistics Display Result

(\*)Reference made to Annex for description of each item in the above Figure

## 4.7.1.3. Daily Traffic Statistic DISPLAY

Function that inquires about the Hourly Traffic Statistics collected in a week by BSC by hour, by BTS and by service option.

- Command : DIS-DLY-TRAF:WEEK=a,HOUR=b, OPTION=c, BSC=d, BTS=e;
  a. WEEK : Day of the Week (MON/TUE/WED/THU/FRI/SAT/SUN)
  b: HOUR : Time (24hour system)
  c: OPTION : Service Option
  d: BSC : BSC number (0 ~ 11)
  e : BTS : BTS number (0 ~ 47)
- Display : Result is same as the content of 4.6.1.2.

## 4.7.2. Handoff Related Statistics Function

Handoff Statistics function appears as follows:.

Intitled Intitled
Command for Handoff Statistics (STAT-HOFF)
Command for Softer Handoff Statistics(STAT-HDOF-SOFTER)
Command for Soft Handoff Statistics (STAT-HOFF-SOFT)
Command for Hard Handoff Statistics (STAT-HDOF-HARD)

Fig. 4.7-5 Handoff related Statistics Function

### 4.7.2.1. Handoff Statistics

Function that CCP conducts measurement of Handoffs generated in each BSC in reference to the kind of Handoff(softer, soft, hard) and its direction and then reports to BSM. Handoffs are divided into the kinds as follows:

Softer Handoff

Softer Handoff generated between sectors in the same BTS

Soft Hand off

- Intra BTS soft Handoff : Soft Handoff generated between sectors in the same Base

Station

- Intra BSC Soft Handoff : Soft Handoff generated between the same BSCs

- Inter MSC Soft Handoff : Soft Handoff generated between other BSCs

Hard Hand off

- Intra Cell Hard Handoff : Hard Handoff generated by frequency change in the same BTS

- Intra BSC FR Hard Handoff : Hard Handoff generated by frequency change between BTSs of the same BSC

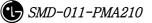
- Intra BSC FO Hard Handoff : Hard Handoff generated by Frame offset between BTSs of the same BSC

- Inter BSC FR Hard Handoff : Hard Handoff by frequency change generated between BTSs of other BSCs

- Inter BSC FO Hard Handoff : Hard Handoff by the change of Frame offset generated between BTSs of other BSCs

- Hard Hand off between RCs : Handoff generated between RCs

- Command : STAT-HOFFF:BSC=a, BTS=b[,MPRD=c,MTIM=d];
  - a : BSC : BSC number ( 0 ~ 11)
  - b:BTS:BTS number (  $0 \thicksim 47$  )
  - c:Cycle(minute) :Default 30min
  - d : Repetition Frequency : Default 4 times
- Display :



							C	ommai	nd Wir	ndow							
								ommun		nuow							
1SC ( D	H7201 STM = ITEM = RESULT BSC = BTS =	11 : 21, = SOFTER   [ = OK 00	CS ON SOFT MPRD = 5 Handoff	:, MTIM <sup>-</sup> =	1/1	_UNAV TC. 0 0 0 0 0	_FAIL BSI 0 0 0 0 0 0	P_CAPA BSP 0 0 0 0 0 0	P_REJ A3 0 0 0 0 0 0	_FAIL F0_ 0 0 0 0 0 0	_UNAV C 0 0 0 0 0	41_TO CCF 0 0 0 0 0 0	NCP CCF 0 0 0 0 0 0	P_ESP CCI 0 0 0 0 0 0	P_SMP INT 0 0 0 0 0 0	ER_CCP ( 0 0 0 0 0	0THER 0 0 0 0 0 0
CONTI	NUE x00) 200 M7202 STM =	11 : 21, • SOFT BE	CS ON SOFT MPRD = 5														
	BSC =	00															
CONTI	0 0	)_BTS AT O 1	IPT SUCC O O O O	NET_FAIL O O	TC_UNAV 0 0	TC_FAIL 0 0	BSP_CAP/ 0 0	A BSP_REJ O O	A3_FAIL O O	FO_UNAV O O	CAI_TO O O	CCP_NCP 0 0	CCP_BSP 0 0	CCP_SMP 0 0	INTER_CC 0 0	P OTHER O O	
.SC ( 0	M7203	11 : 21,	11:21:24 CS ON SOFT MPRD = 5														

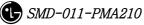
#### Fig. 4.7-6 Handoff Statistics

(\*)This Command(STAT-HOFF) displays all kinds of Handoff. Refer to Appendix for each item.

### 4.7.2.2. Softer Handoff Statistics

It collects by collected item (refer to Appendix) the soft Handoff generated between sectors in the same BTS and displays.

- Command : STAT-HOFF-SOFTER:BSC=a, BTS=b[,MPRD=d, MTIM=d];
  - a : BSC : BSC number ( 0 ~ 11)
  - ${\tt b}:{\tt BTS}:{\tt BTS}$  number ( 0 ~ 47 )
  - c : MPRD : Cycle(min) : Default 30min
  - d : MTIM : Repetition number : Default 4times
- Display



							Comn	nand V	Vindou	<i>v</i>						
STM = 1	TATISTICS 1 : 30, SOFTER HA = OK	S ON SOFT MPRD = 5														
SECTOR ALPHA ALPHA BETA BETA GAMMA GAMMA COMPLETED	TO_SEC BETA GAMMA ALPHA GAMMA ALPHA BETA	ATTPT 0 0 0 0 0 0	SUCC NE O O O O O O	ET_FAIL 0 0 0 0 0 0	TC_UNAV 1 0 0 0 0 0 0	FC_FAIL 0 0 0 0 0 0	BSP_CAPA 0 0 0 0 0 0 0	BSP_REJ 0 0 0 0 0 0 0	A3_FAIL 0 0 0 0 0 0	F0_UNAV 0 0 0 0 0 0	CAI_T0 0 0 0 0 0 0	CCP_NCP 0 0 0 0 0 0	CCP_BSP 0 0 0 0 0 0	CCP_SMP 0 0 0 0 0 0	INTER_CCP 0 0 0 0 0 0	OTHER 0 0 0 0 0

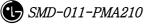
#### Fig. 4.7-7 Softer Handoff Statistics Display

(\*)Refer to Appendix for each item described above.

## 4.7.2.3. Soft Handoff Statistics

It measures for display the soft Handoff generated between sectors of the same BTS, in the internal part of the same BSC, or in other BSC.

- Command : STAT-HOFF-SOFT:BSC=a[,BTS=b, MPRD=c, MTIM=d];
  - a : BSC : BSC number (  $0 \sim 11$  )
  - b:BTS:BTS number (  $0 \thicksim 47$  )
  - c : Cycle(min) : Default 30min
  - d : Repetition Frequency : Default 4times
- Display



INTER		
	Command Window	
	D1-06-18 13:31:50 STAITSTICS ON SOFT BTS HAND_OFF 13 : 31, MPRD = 5, MTIM = 1/1 = SOFT BETWEEN BTS T = 0K 00	
CONTIN	D_BTS ATTPT SUCC NET_FAIL TC_UNAV TC_FAIL BSP_CAPA BSP_REJ A3_FAIL F0_UNAV CAI_T0 CCP_NCP CCP_BSP CCP_SMP INTER_CCP 0THER 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
	D1-06-18 13:31:50 STATISTICS ON SOFT BSC HAND_OFF 13 : 31, MPRD = 5, MTIM = 1/1 T = 0k = SOFT BETWEEN BSC 00 SOFT HANOFF NOT OCCURED!!	
	D1-06-18 13:31:50 STATISTICS ON SOFT MSC HAND_OFF 13 : 31, MPRD = 5, MTIM = 1/1 = INTER SOFT MSC HANDOFF T = 0K	
60HD1 -	ULLY DETERMINED	
COMPLE		

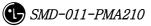
Fig. 4.7-8 Soft Handoff Display Result

(\*) Refer to Appendix for description of the items above.

## 4.7.2.4. Hard Handoff Statistics

It is statistics to be measured in CCP for Hard Handoff between BSCs, such as Handoff followed by frequency change between the same BTSs and Handoff generated in the same BSC, and Hard Handoff generated between RCs.

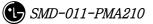
- Command : STAT-HOFF-HARD:BSC=a,BTS=b[,MPRD=c,MTIM=d];
   a : BSC : BSC ( 0 ~ 11 )
   b : BTS : BTS ( 0 ~ 47 )
  - c : MPRD : Cycle(min) : Default 30min
  - d : MTIM : Number of Frequency : Default 4times



								(	Com	mane	t Wind	ow						
STM ITEM	2001-06-18 )5 STATIST = 13 : 42 1 = HARD H JLT = 0K	ICS ON , MPRE	HARD B	TS HANI MTIM :	D_OFF = 1/1													
BSC	= 00																	
BTS O O	RA CELL HA SECTOR ALPHA BETA GAMMA	RD HANE ATTPT 0 0 0	OOFF SUCC O O O		FAIL O O O	TC_UNAN 0 0 0	TC_FAI 0 0 0	il BSP,	_CAPA 0 0 0	BSP_RE 0 0 0	A3_FAII 0 0 0	. FO_UNAV O O O	CAI_TO O O O	CCP_NCP 0 0 0	CCP_BSF 0 0 0	CCP_SMP 0 0 0	INTER_CC 0 0 0	P OTHER O O O
			SUCC	NET_F/	AIL O	FC_UNAV O			CAPA O	BSP_REJ O	A3_FAIL O	FO_UNAV O	CAI_TO O	CCP_NCP 0	CCP_BSP 0	CCP_SMP O	INTER_CCP 0	OTHER O
			SUCC	NET_F/	AIL <sup>I</sup>	FC_UNAV O	TC_FAIL O	BSP_	CAPA O	BSP_REJ O	A3_FAIL O	FO_UNAV O	CAI_TO O	CCP_NCP 0	CCP_BSP 0	CCP_SMP 0	INTER_CCP 0	OTHER O
ISC(0x00) 2 M720 STM ITEM	2001–06–18 D6 STATIST = 13 : 42 1 = HARD H JLT = 0K	ICS ON	HARD B = 5,	MTIM :	= 1/1													
BSC	= 00																	
INTE	ER BSC FR	HARD HA	NDOFF															
BSC-	-HARD FO H	ANOFF N	ют осс	URED!!														
INTE	ER BSC FO	HARD HA	NDOFF															
BSC-	-HARD FR H	ANOFF N	ют осс	URED ! !														
STM ITEM	2001-06-18 )7 STATIST = 13 : 42 1 = HARD H JLT = OK	ICS ON , MPRE	HARD M ) = 5,	MTIN :	D_OFF = 1/1													
BSC	= 00																	
NOT	FULLY DET	ERMINED	)															
ONTINUE																		
STM ITEM	2001-06-18 08 STATIST = 13 : 42 1 = RC HAR JLT = 0K	ICS ON	HARD R = 5,	C HAND	_0FF = 1/1													
	= 00																	
	IANDOFF NO	T OCCUR	RED!!															
OMPLETED																		

#### Fig. 4.7-9 Hard Handoff Statistics Display

(\*)Refer to Appendix for description of the each item described above.



## 4.7.3. Call Related Statistics Function

Statistics function related to call is as followed.

🔀 Untitled 🛛 🗶
Command for Channel Element Statistics (STAT-CE)
Command for Vocoder Statistics (STAT-VOC)
Command for Network Statistics (STAT-NET)
Command for Channel Quality Statistics (STAT-CH)
Command for Proc IPC load Statistics (STAT-PRC)
Command for Selector Statistics (STAT-SLT)
Command for BTS Performance Stat (STAT-PERF)
Command for Mobile Paging Statistics (STAT-PAGE)
Command for CAI Signaling Stat (STAT-CAI)
Command for No.7 Signaling Statistics (STAT-N07)
Command for RTD Statistics (STAT-RTD)
Command for RF MIN-MAX (STAT-RF)

Fig. 4.7-10 Statistics Function Related to Call

## 4.7.3.1. Channel Element Statistics Function

The system reports the used counts that the traffic channel is occupied by the traffic element for the call to the BSM by BSP and channel card.

- Command : STAT-CE:BSC=a[,BTS=b,MPRD=c,MTIM=d];
  - a : BSC : BSC number (  $0 \sim 11$  )
  - b : BTS : BTS number ( 0 ~ 47 )
  - c:MPRD:Cycle(min) :Default 30min
  - d : MTIM : Repeat Count : Default 4times
- Display.

			Comm	and V	Vindov	v					
MSC(0x00) 2001-06-18 15:14:58 M7003 STATISTICS: CHANNEL-ELEMENT DATA HOURLY REPORT TIME : Mon Jun 18 02:00:00 2001 RESULT = OK BSC = 01, BTS =00, RCP_N0 = 0											
	СНС	TC ATT	TC SUC	TC_HLD	ΗΟ ΑΤΤ	HO_SUC	HO_HLD				
	00	0	0	0.00	0	0	0.00				
	01	Ō	Ō	0.00	Ō	Ō	0.00				
	02	0	0	0.00	0	0	0.00				
	03	0	0	0.00	0	0	0.00				
	04	0	0	0.00	0	0	0.00				
	05	0	0	0.00	0	0	0.00				
	06	0	0	0.00	0	0	0.00				
	07	0 0	0 0	0.00 0.00	0 0	0 0	0.00				
	08 09	U	U 0	0.00	U 0	U 0	0.00 0.00				
							0.00	-			
	TOTAL	0	0	0.00	0	0	0.00				
COMPLET	ED										

Fig. 4.7-11 Channel Statistics Function

(\*)Refer to the appendix for the description of each items in the figure above.

## 4.7.3.2. Vocoder Statistics Function

It is the function that measures and reports the occupancy count and time to vocoder which decodes/encodes voice corresponded to channel element by 1:1. The data is collected in VCP by VCE.

- Command : STAT-VOC:BSC=a,VMP=b[,VCP=c,MPRd=d,MTIM=e];
  - a : BSC : BSC number ( 0 ~ 11)
  - b:BTS:BTS number ( 0 ~ 47)
  - c : VMP : Vocoder Master Processor number(0 ~ 7)
  - d : VCP : VCP number ( 0  $\sim$  15 )
  - e : MPRD : Cycle(min) : Default 30min
  - f : MTIM : Repeat Count : Default 4times
- Display

		С	om	mar	nd Wind	dow	
SC(0x00) 2001	_0C_10	14:30					
	TATISTIC			DER			
STM = 1	4:30,		) = 5		IM = 1 / 1	1	
RESULT	= 0K						
$\mathbf{PCC} = 0$	0						
BSC = 0 VMP_NO	VCP_N0	SLV	nsp	VCE	SEIZURE	DURATION	
00	00	00	00	ĨÕÕ	0	0 sec	
ŌŌ	00	00	00	01	ī	5 sec	
00	00	00	00	02	0	0 sec	
00	00	00	00	03	0	0 sec	
00 00	00 00	00 00	01 01	00 01	0 0	0 sec 0 sec	
00	00	00	01	02	ŏ	0 sec	
ŐŐ	ŏŏ	ŐŐ	Õİ	03	ŏ	0 sec	
00	00	00	02	00	0	0 sec	
00	00	00	02	01	0	0 sec	
00 00	00 00	00 00	02 02	02 03	0 0	0 sec 0 sec	
00	00	00	02	00	ŏ	0 sec	
ŐŐ	ŐŐ	ŏŏ	03	ŐĨ	ŏ	0 sec	
00	00	00	03	02	0	0 sec	
00	00	00	03	03	0	0 sec	
00 00	00 00	01 01	00 00	00 01	0	0 sec 0 sec	
00	00	01	00	02	0	0 sec	
00	ŏŏ	Ŏ	ŏŏ	03	ŏ	0 sec	
00	00	01	01	00	Ō	0 sec	
00	00	01	01	01	0	0 sec	
00	00	01	01	02	0	0 sec	
00 00	00 00	01 01	01 02	03 00	0 0	0 sec 0 sec	
00	00	01	02	01	ŏ	0 sec	
ŏŏ	ŏŏ	ŎĨ	02	02	ŏ	0 sec	
00	00	01	02	03	0	0 sec	
00	00	01	03	00	0	0 sec	
00 00	00 00	01 01	03 03	01 02	0 0	0 sec 0 sec	
00	00	01	03	03	Ŭ	0 sec	
	VCP ТОТ	AL			1	 5 sec	
						2 200	

Fig. 4.7-12 Vocoder Statistics Output

(\*)Refer to the appendix for the description of each item in the figure above.

## 4.7.3.3. Network Statistics Function

VLIA measures and reports the use rate and error rate of T1 (or E1)'s trunk between BSC and the switching system. ASIA and ASCA collect and report the port statistics between BSC and CAN. LICA and ALPA are the function collecting link statistics to

report between BSC and BTS.

- Command : STAT-NET:CAN=a,BSC=b[,BTS=c,ITEM=d,MPRD=e,MTIM=f];
  - $a:\mathsf{CAN}:\;$  the participation matter of the  $\mathsf{CAN}$  equipment processor
  - b:BSC:BSC number (  $0 \thicksim 11$  )
  - c : BTS : BTS number ( 0 ~ 47)
  - $\texttt{d}: \texttt{ITEM}: \texttt{Trunk}(\texttt{BSC}{\leftrightarrow}\texttt{Switching system}) \ / \ \texttt{Link}(\texttt{BSC}{\leftrightarrow}\texttt{BTS})$ 
    - / Port(BSC↔CAN)
  - e : MPRD : Cycle(min) : Default 30min
  - d : MTIM : Repeat Count : Default 4times
- Display Results

<b>INTERM</b>								
			Cor	nmai	nd Win	dow		
STM =	STATI 09 : T = 0k	STICS ON 48, MPR	NETWORK	( MTIM =	1/1			
LINK_STAT	NCP 0 0 0	ALP ALP ALP ALP	ID REAL 00 ALF 00 ALF 00 ALF 00 ALF	PA 00 PA 00 PA 00 PA 00 PA 00	00 01 02 03	153763 41847 3000 3000	(_COUNTER 119156 33196 0 3000	
LINK_STAT	0 BSC 0 0 0 0 0	BTS MAS O BS O BS O BS O BS O BS O BS	P 00 P 00 P 00 P 00 P 00 P 00	REAL LICA LICA LICA LICA LICA	04 ID LINK 00 00 00 01 00 02 00 03 00 04	119399 0 3000 0 0	154129 0 3000 0 1441570	
TRUNK CC 0 0 0 0 0 0 0		0 0 0 0 0	TRUNK E1-00 E1-01 E1-02 E1-03 E1-03 E1-04	LICA NORMAL 301 301 301 301 0	00 05 Remote 0 0 0 0 0	0 LOCAL 0 0 0 0	1441570 SLIP BIT 0 0 0 0 0	0 0 0 0 0
PORT_STAT	MASTE PNP (C PNP (C PNP (C PNP (C PNP (C PNP (C	ER REAL 10 ASCAO 10 ASCAO 10 ASCAO 10 ASCAO 10 ASCAO 10 ASCAO 10 ASCAO 10 ASCAO	0 A 0 A 0 A 0 A 0 A 0 A 0 A	00 00 00 00 00 00 00	0 INK PORT 00 A 00 B 01 A 01 B 02 A 02 B 02 B 03 A 03 B	0 TX_COUNTER 6076 6068 1991 1991 0 0 0 0	0 RX_COUNTER 5947 0 1025 0 0 0 0	0 7

#### Fig. 4.7-13 Network Statistics Output Results

(\*)Refer to the appendix for the description of each item in the figure above.

## 4.7.3.4. Radio Channel Quality Statistics Function

This function measures (Channel Element) and reports error rate and other things on radio channel between mobile subscriber and BTS.

- Command : STAT-CH:BSC=a[,BTS=b,MPRD=c,MTIM=d];
  - a : BSC : BSC number ( 0 ~ 11 )
  - b:BTS:BTS number (  $0 \sim 47$  )
  - c : MPRD : Cycle(min) : Default 30min
  - d : Measuring Count : Default 4times
- Display Results

Command Window         MSC(0x00) 2001-06-19 09:48:34         M7006 STATISTICS ON BTS CHANNEL QUALITY         STM = 09 : 48, MPRD = 5, MTIM = 1/1         RESULT = 0K         BSC = 00 : BTS = 00         RCP PATH RX_FR_CNT TX_FR_CNT FR_ERR_CNT FR_MIS_CNT         0       0       0         0       1       0       0         0       2       0       0         0       3       0       0       0         0       4       0       0       0         0       4       0       0       0         0       5       0       0       0         0       5       0       0       0	🔀 INTERM					
M7006 STATISTICS ON BTS CHANNEL QUALITY         STM = 09 : 48, MPRD = 5, MTIM = 1/1         RESULT = 0K         BSC = 00 : BTS = 00         RCP PATH RX_FR_CNT TX_FR_CNT FR_ERR_CNT FR_MIS_CNT         0       0         0       0         0       1         0       0         0       2         0       0         0       3         0       0         0       4         0       0         0       0			Comman	d Window	,	
$ \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 2 & 0 & 0 & 0 & 0 \\ 0 & 3 & 0 & 0 & 0 & 0 \\ 0 & 4 & 0 & 0 & 0 & 0 \\ 0 & 5 & 0 & 0 & 0 & 0 \end{bmatrix} $	M7006 STM = Result	STATISTICS ON 09 : 48, MPRI 7 = OK	BTS CHANNEL QU	JALITY 1/1		
	0 0 0 0 0	0 ( 1 ( 2 (	NT TX_FR_CNT 0 0 0 0 0 0 0 0	FR_ERR_CNT 0 0 0 0 0 0	FR_MIS_CNT 0 0 0 0 0 0	T.

Fig. 4.7-14 Radio Channel Statistics Output Results

(\*)Refer to the appendix for the description of each item in the figure above.

## 4.7.3.5. Processor Statistics Function

This is the function that each processor measures CPU and IPC load of each main processor at a given time to report to the BSM.

- Command : STAT-PRC:CAN=a,BSC=b[,BTS=c,MPRD=d,MTIM=e];
  - a : CAN : CAN equipment processor inclusion matter
  - b : BSC : BSC number (  $0 \sim 11$  )
  - c : BTS : BTS number ( 0 ~ 47 )
  - d : MPRD : Cycle(min) : Default 30min

- e : MTIM : Repeat Count : Default 4times
- Display Results

			Comn	nand Win	dow		
MSC(0x		ISTICS: PRO 1 Jun 17 00:	CESSOR LOAD	DATA HOURLY	REPORT		ĺ
	BSC = 00 PROCESSOR CNP NCP PNP BSP 01 BSP 00 PCP 00	CPU_IDLE 18.82 15.01 18.82 16.11 13.38 18.10	SEND_IPC 8677 508614 21603 677503 522330 338960	6878 483199 19941 603191 524979	SEND_AVG_LEN 83 72 78 90 100 145	RECV_AVG_LEN 970 508 878 947 285 1135	
COMPLE	NCP 00	PROCESSOR ALP OO			V_IPC SND_AVG 4304 &	LEN RCV_AVG_I 2 997	LEN

Fig. 4.7-15 Processor Statistics Display Results

(\*)Refer to the appendix for the description of each item in the figure above.

#### 4.7.3.6. Selector Statistics Function

It is the statistics function that measures the occupying call, time, speed and bad frame counts of the selector.

- Commands : STAT-SLT:BSC=a,SMP=b[,SLP=c,MPRD=d,MTIM=e];
  - a : BSC : BSC number (  $0 \sim 11$ )
  - b : SMP : Selector Master Processor number ( 0 ~ 4)
  - c : SLP : Selector Processor number (  $0 \sim 19)$
  - d:MPRD:Cycle(min):Default 30min
  - e : MTIM : Count : Default 4times
- Display Results

				Com	mand W	lindow			
	2001 00	10 10.00.	00						
		-19 10:26: ISTICS ON S							
			= 5, MTIM :	= 1/1					
	SULT = 0		- 5, 1110						
nc.	VCI 0	•							
BS	C = 00								
SMI	SLP SL	ATTEMPT	DURATION	BIT_ERR	ERASURES	FSCH_DUR	RSCH_DUR	AVG_FSCH_R	AVG_RSCH_R
	) 0 (	) (	0 sec	_ 0	0	0 sec	0 sec	0.0	_0. 0_
		1 0	0 sec	0	0	0 sec	0 sec	0.0	0.0
		2 0	0 sec	0	0	0 sec	0 sec	0.0	0.0
		3 0	0 sec	0	0	0 sec	0 sec	0.0	0.0
		) ()	0 sec	0	0	0 sec	0 sec	0.0	0.0
			0 sec	0	0	0 sec	0 sec	0.0	0.0
		2 0	0 sec	0	0	0 sec	0 sec	0.0	0.0
		30 100	0 sec	0	0	0 sec	0 sec	0.0	0.0
		) () 1 ()	0 sec	0 0	0 0	0 sec	0 sec	0. 0 0. 0	0. 0 0. 0
		2 0	0 sec 0 sec	0	0	0 sec 0 sec	0 sec 0 sec	0.0	0.0
		30	0 sec	Ŭ	ŏ	0 sec	0 sec	0.0	0.0
		j Ö	0 sec	ň	ŏ	0 sec	0 sec	0.0	0.0
		í ŏ	0 sec	ň	ŏ	0 sec	0 sec	0.0	0.0
		2 Ŭ	0 sec	ŏ	ŏ	0 sec	0 sec	0. O	0. 0
		3 Ŭ	0 sec	ŏ	ŏ	0 sec	0 sec	ŏ. ŏ	Ö. Ö
		j ŏ	0 sec	ŏ	ŏ	0 sec	0 sec	Ő. Ő	0. O
		ĪŌ	0 sec	Ō	Ō	0 sec	0 sec	Ū. Ū	Ū. Ū
		2 0	0 sec	0	0	0 sec	0 sec	0.0	0.0
		30	0 sec	0	0	0 sec	0 sec	0.0	0.0
		) ()	0 sec	0	0	0 sec	0 sec	0.0	0.0
	) 5	1 0	0 sec	0	0	0 sec	0 sec	0.0	0.0
9		2 0	0 sec	0	0	0 sec	0 sec	0.0	0.0
	) 5 :	3 O	0 sec	0	0	0 sec	0 sec	0.0	0.0

Fig. 4.7-16 Selector Statistics Display Results

(\*)Refer to the appendix for the description of each item in the figure above.

## 4.7.3.7. Performance (Call Delay) Statistics Function

This is the function of BSP that measures and reports the setup delay (Time to Traffic, Channel Assign) of originating/terminating signal to mobile subscribers.

- Command : STAT-PERF:ITEM=a, BSC=b[,BTS=c,MPRD=d,MTIM=e];
  - a: ITEM: ALL-Measure originating and terminating,

ORG - Originating,

TRM- Terminating

- b : BSC : BSC number ( 0  $\sim$  11 )
- c : BTS : BTS number ( 0 ~ 47 )
- d:MPRD:Cycle(min) :Default 30min
- e : MTIM : Repeat Count : Default 4times
- Display Results

🔀 INTER	IVI										
Command Window											
MSC(0x	M7010 S	TATISTIC 1 : 45,	11:45:32 S ON CALL REQU MPRD = 5, MT								
	BSC = 0		UNDER_500ms 0 0 0	500ms 0 0 0	600ms 0 0 0	700ms 0 0 0	800ms 0 0 0	900ms 0 0 0	1000ms 0 0 0	0VER_1100 0 0 0	
COMPLE		SECTOR ALPHA BETA GAMMA	UNDER_3000ms 0 0 0	3000ms 0 0 0	4000ms 0 0 0	4500ms 0 0 0	5000ms 0 0 0	6000ms 0 0 0	7000ms 0 0 0	0VER_8000 0 0 0	

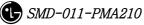
Fig. 4.7-17 Call Delay Performance Statistics Display Results

(\*)Refer to the appendix for the description of each item in the figure above.

## 4.7.3.8. Paging Statistics Function

This is the function of BSP to measure and report the attempt, success and failure counts of paging to the mobile subscriber.

- Command : STAT-PAGE:BSC=a[,BTS=b, MPRD=c, MTIM=d];
  - a: BSC : BSC number(  $0 \sim 11$  )
  - b: BTS : BTS number( 0  $\sim$  47 )
  - c: MPRD : Cycle(min) : Default 30min
  - d: MTIM : Repeat Count : Default 4times
- Display Results



		С	ommo	ind W	indow	
STM = RESULT BSC =	STATISTICS O 11 : 45, MP = OK	N PAGING CHA RD = 5, MT]	CM = 1/1		PAGE_TMO O O O	

Fig. 4.7-18 Paging Statistics Display Results

(\*)Refer to the appendix for the description of each item in the figure above.

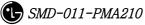
## 4.7.3.9. CAI Statistics Function

This is the function of BSP to measure and report the CAI signaling message at a given time which is transmitted and received by access channel and paging channel.

- Command : STAT-CAI:ITEM=a,BSC=b[,BTS=c,MPRD=d,MTIM=e];
  - a : ITEM : ALL Access, Paging channel both to be measured
    - PC Paging channel only to be measured

AC – Access channel only to be measured

- b:BSC:BSC number (  $0 \thicksim 11$  )
- c : BTS : BTS number (  $0 \sim 47$  )
- d : MPRD : Cycle(min) : Default 30min
- e : MTIM : Repeat Count : Default 4times
- Display Count



🔀 INTERM								<u>_     ×</u>
			Com	mand	Windo	w		
STM = RESULT BSC = ITEM = BTS_N0 00	STATISTIC 11 : 45, = OK DO PAGING C	S ON CAI S MPRD = 5	, MTIM =	1/1	,ASGN DAT O O O	A_BRST 15 0 0	SER_REDIR O O O	⊼
ITEM = BTS_NO 00 00 COMPLETED	ACCESS C SECTOR ALPHA BETA GAMMA	HANNEL MSG_CNT 0 0	ORIG_CNT O O O	REG_CNT O O O	AUTH_ODR 0 0 0	PAGE_R	ISP DATA_BRST 0 0 0 0 0 0	5

#### Fig. 4.7-19 CAI Statistics Display Results

(\*)Refer to the appendix for the description of each item in the figure above.

## 4.7.3.10. No.7 Signaling Statistics

No.7 signaling is the function of SCP to collect by sorting into MTP and SCCP, and report it to the BSM.

- Command : STAT-NO7:ITEM=a,SCP=b[,MPRD=c,MTIM=d];
  - a : ITEM : MTP, SCCP or ALL
  - b: SCP: SCP(BSC) Number(0~11)
  - c: MPRD: execution cycle(5~60min, default:30min)
  - d : MTIM : execution count(1~100, default:4)
- Display Results

	- D ×									
Command Window										
MSC(0x00) 2001-06-21 14:30:31 M7013 STATISTICS: No.7 SIGNALING DATA HOURLY REPORT TIME : Sat Jun 16 03:00:00 2001 SCP = 01 ITEM = SCCP TX_UDTS RX_UDTS TX_DTL RX_DTL SCCP_CONN SCCP_REL CONN_FAIL 0 0 0 0 0 0 0 0 0										
ITEM = MTP SL_NO LOSS_MSG ERR_MSG NACK_NO RTX_OCT TX_MSG RX_MSG TX_OCT RX_OCT 01 0 0 0 0 900054 900054 19801188 19801188 completed	M									

Fig. 4.7-20 No.7 Signaling Statistics Display Results

(\*)Refer to the appendix for the description of each item in the figure above.

### 4.7.3.11. RTD Statistics

Round Trip Delay Statistics: BSP collects and reports the converted time from BTS antenna to BTS antenna via MS into distance.

- Command : STAT-RTD:BSC=a,BTS=b[,MPRD=c,MTIM=d];
  - a : BSC : BSC number ( 0 ~ 11 )
  - b : BTS : BTS number ( 0 ~ 47 )
  - c: MPRD: Cycle(min): Default 30min
  - d : MTIM : Repeat Count : Default 4times
- Display Results

🔀 INTERM											<u>_     ×</u>
Command Window											
MSC(0x00) 2001-0 M7016 STA STM = 14 RESULT =	TISTICS : 25,	4:25:01 ON RTD MPRD = 5,	MTIM	= 1/1							
BSC = 00,	BTS =0	0									
ITEM = ORIGINATION CALL											
SECTOR Alpha Beta Gamma	200 0 0 0	400 600 0 0 0 0 0 0	800 0 0 0	1.0K 0 0 0	1.2K 0 0 0	1.4K 0 0 0	1.6K 0 0 0	1.8K 0 0 0	2.0K 0 0 0	2.5K 0 0 0	
SECTOR ALPHA BETA GAMMA	3.0K 3 0 0 0	.5K 4.0K 0 0 0 0 0 0	5.0K 2 0 0	6.0K 0 0 0	7.0K 5920 0 0	8.0K 0 0 0	9.0K 0 0 0	10.0K 0 0 0	OVER_	.10K 0 0 0	
BSC = 00, ITEM = TER											
SECTOR		400 600	800	1.OK	1.2K	1 40	1 67	1.8K	2.0K	2.5K	
ALPHA BETA GAMMA	0 0 0	0 0 0 0 0 0	0 0 0 0	0 0 0	0	0 0 0	0 0 0	0	2.0K 0 0	2.3K 0 0 0	
SECTOR ALPHA BETA GAMMA COMPLETED	3.0K 3 0 0 0	.5K 4.0K 0 0 0 0 0 0	5.0K 0 0 0	6.0K 0 0 0	7.0K 0 0 0	8.0K 0 0 0	9.0K 0 0 0	10.0K 0 0 0	OVER_	.10K 0 0 0	

#### Fig. 4.7-21 RTD Statistics Display Results

(\*)Refer to the appendix for the description of each item in the figure above.

## 4.7.3.12. RF MIN/MAX Statistics Function

RFP reports to the BSP concerning TX power at a given time with the minimum and maximum value.

- Command : STAT-RF:BSC=a,BTS=b,MPRD=c,MTIM=d;
  - a : BSC : BSC number (  $0 \, \sim \, 11$  )
  - b : BTS: BTS number ( 0  $\sim$  47 )
  - c : MPRD : Cycle(min) : Default 30min
  - d : MTIM : Repeat Count : Default 4min

• Display Results

INTERM	
Command Window	
MSC(0x00) 2001-06-19 14:25:14 M7017 STATISTICS ON RF MIN-MAX STM = 14 : 25, MPRD = 5, MTIM = 1/1 RESULT = 0K BSC = 00 ITEM = SECTOR*FA BTS_NO SECTOR FA TX_MAX(W) TX_MIN(W) 00 ALPHA 0 1.99 1.64	
00 ALPHA 0 1.99 1.64 ALPHA 1 0.0 0.0 00 BETA 0 0.0 0.0 BETA 1 0.0 0.0 00 GAMMA 0 0.0 0.0 GAMMA 1 0.0 0.0 COMPLETED	
A	

Fig. 4.7-22 RF Min/Max Statistics Function Display Results

(\*)Refer to the appendix for the description of each item in the figure above.

# 4.7.4. Packet Related

Packet related statistics function is as followed.

🔀 Untitled
Command for Packet DATA Statistics (STAT-PKD)
Command for Packet CONTROL Statistics (STAT-PKC)
Command for Packet HANDOFF Statistics (STAT-PKH)

Fig. 4.7-23 Packet Statistics Function

# 4.7.4.1. Packet Data Statistics Function

PIP collects average data transmission between BSC and PDSN and reports it to the BSM through PCP.

• Command : STAT-PKD:PCP=a,SHELF=b[,PIP=c, MPRD=d, MITM=e];

- a : PCP : PCP number ( 0 ~ 2 )
- b: SHELF: Shelf number (SHELF 0, SHELEF 1, ALL)
- c : PIP : PIP number (  $0 \thicksim 11$  )
- d : MPRD : cycle(min) : Default 30min
- e : MTIME : Repeat Count : count 4times
- Display Results

					Com	nand Wina	low			
		-06-19 14:3								
		FATISTICS: F Mon Jun 18 2		TA HOURLY REP	DRT					
	INC .		.5.00.00 /	2001						
R	ESULT	= 0K								
P	СР РІ			RN_SDBSUCC	PDSN_SDB	PDSN_SDBSUCC	TOT_SDB_FOR	TOT_SDB_REV	TOT_ACT_FOR	TOT_ACT_REV
	0	) ()	0	0	0	0	0.000K	0.000K	0.000K	0.000K
	U U		0	0 N	0	0	0.000K 0.000K	0.000K 0.000K	0.000K 0.000K	0.000K 0.000K
		20 30	U 0	U N	U 0	U N	0.000K	0.000K	0.000K	0.000K
		i ö	ŏ	ň	ŏ	ŏ	0.000K	0.000K	0.000K	0.000K
		5 ŏ	ŏ	ŏ	ŏ	ŏ	0.000K	0.000K	0.000K	0.000K
		5 Ō	Ō	Ō	Ō	Ō	0.000K	0.000K	0.000K	0.000K
		70	0	0	0	0	0.000K	0.000K	0.000K	0.000K
		3 O	0	0	0	0	0.000K	0.000K	0.000K	0.000K
		9 0	0	0	0	0	0.000K	0.000K	0.000K	0.000K
	0 1	) 0	0	0	0	0	0.000K	0.000K	0.000K	0.000K
P	MP PI	P PKT_SUCC	RN_SDB	RN_SDBSUCC	PDSN_SDB	PDSN_SDBSUCC	TOT_SDB_FOR	TOT_SDB_REV	TOT_ACT_FOR	TOT_ACT_REV
	0	) 0	_ 0	0	0	0	0.000K	0.000K	0.000K	0.000K
	0	0	0	0	0	0	0.000K	0.000K	0.000K	0.000K
		2 0	0	0	0	0	0.000K	0.000K	0.000K	0.000K
		30 100	0	U	0	0	0.000K 0.000K	0.000K 0.000K	0.000K 0.000K	0.000K 0.000K
		• U 5 O	Ŭ	U 0	ŭ	Ů	0.000K	0.000K	0.000K	0.000K
		šŏ	ŏ	ň	ň	ŏ	0.000K	0.000K	0.000K	0.000K
		ž Ö	ŏ	ŏ	ŏ	ŏ	0.000K	0.000K	0.000K	0.000K
		30	0	Ō	Ō	0	0.000K	0.000K	0.000K	0.000K
		9 0	0	0	0	0	0.000K	0.000K	0.000K	0.000K
	0 1	) 0	0	0	0	0	0.000K	0.000K	0.000K	0.000K
MPLETE	U									

Fig. 4.7-24 Packet Data Statistics Display Results

(\*)Refer to the appendix for the description of each item in the figure above.

### 4.7.4.2. Packet Control Statistics Function

It is the function to collect and report to BSM regarding the following: the call attempt count and call success count, the attempt count and success count of packet call transition from dormant status to active status, and each average call holding time between BSC and PDSN.

• Command : STAT-PKC:PCP=a[,MPRD=b,MTIM=c];

a : PCP : PCP number ( 0 ~ 2 )

- b:MPRD:cycle(min):Default 30min
- c : MTIM : Repeat Count : Default 4min

• Display Results

🔀 INTERM		<u>-                                    </u>
C	ommand Window	
MSC(0x00) 2001-06-19 14 M7014 STATISTICS: TIME : Mon Jun 18	PACKET DATA HOURLY REPOR	KT A
RESULT = OK		
PCP = 00		
PKTATTEMPT PKTSUCC DORATTEMPT DORSUCC PKTPAGING PKTPAGINGFAIL ACTATTEMPT ACTSUCC A10CONRJ DCRFAIL PDSNREL RNREL	2 1 0 0 0 0 0 1 0 0 0 0 0 0 0	
TOT_PKT_TIME TOT_ACT_TIME TOT_DOR_TIME PDSN_ALLOC_FAIL PIP_ALLOC_FAIL ATM_CONN_FAIL ATM_CONN_REL	0.00 0.00 0.00 0 0 0 0 0	
COMPLETED		
A		

Fig. 4.7-25 Packet Control Statistics Function Results Display

(\*)Refer to the appendix for the description of each item in the figure above.

### 4.7.4.3. Packet Handoff Statistics Function

PCP collects and reports the following statistics data to BSM: attempt and failure count of inter BSC hard handoff occurred in the packet traffic procedure by dormant or active status.

• Command : STAT-PKH:PCP=a[,MPRD=b,MTIM=c];

a : PCP : PCP number (  $0 \sim 2$  )

b:MPRD:Cycle(min):Default 30min

c: MTIM: Repeat Count: Default 4time	es
--------------------------------------	----

• Display Results

🔀 INTERM	
Command Window	
MSC(0x00) 2001-06-19 14:54:16 M7015 STATISTICS: PACKET DATA HOURLY REPORT TIME : Mon Jun 18 21:00:00 2001 RESULT = 0K PCP = 00 DOR_HDOFF 0 SERV_HDOFF 0 TAR_BSC_HDOFF 0 HDOFF_FAIL 0 COMPLETED	

Fig. 4.7-26 Packet Handoff Statistics Function Display Results

(\*)Refer to the appendix for the description of each item in the figure above.

# 4.7.5. Other Statistics Related Commands

### 4.7.5.1. Displaying Statistics List under Execution

Displaying statistics list under execution at the request of present user.

- Command : DIS-STAT-JOB;
- Display Results

🔀 INTERM	
Command Window	
MSC(0x00) 2001-06-21 15:55:59 M7102 DISPLAY REGISTRATIONS JOBS FOR STATISTICS RESULT = 0K BSC_N0 JOB_N0 ITEM MPRD REQ_MTIM EXE_MTIM STRT_TIM 00 0 VOC 5 1 1 15:55 COMPLETED	

Fig. 4.7-27 Display Results of Statistics List under Execution

#### 4.7.5.2. Statistics Cancel Command

This is the function to cancel On Demand statistics command under execution.

- Command : CANC-STAT:[BSC=a,]JOB=b;
  - a: BSC:BSC number(0~11)
  - b: JOB: Statistics number (  $0 \sim 7$ )

#### 4.7.5.3. Hourly / Daily Statistics Data Display Command

This is the function that displays the hourly statistics data collected and stored by BSM through the BSM Interm window.

• Hourly Statistics Display Command:

DIS-HLY-DATA:HOUR=a,ITEM=b,BSC=c,BTS=d;

a : HOUR : Time (00 ~ 23)

- b: ITEM: Kinds of Statistics
- c : BSC : BSC number (  $0 \sim 11$  )
- d : BTS : BTS number ( 0 ~ 47 )
- Daily Statistics Display:

DIS-HLY-DATA:WEEK=a,HOUR=b,ITEM=c,BSC=d,BTS=e;

- a:WEEK:Day of the Week (MON/TUE/WED/THU/FRI/SAT/SUN)
- b : HOUR : hour (00 ~ 23)
- c : ITEM : Kinds of Statistics
- d : BSC : BSC number ( 0  $\sim$  11 )
- e : BTS : BTS number (  $0 \sim 47$  )

### 4.7.5.4. On Line Statistics Period Change

This is the function to change the period (basically 5minute) of online statistics(realtime traffic statistics) collected by CCP.

• Command : CHG-ONLINE-MPRD:MPRD=a;

a : MPRD : Period(min) to be changed

• Execution Results

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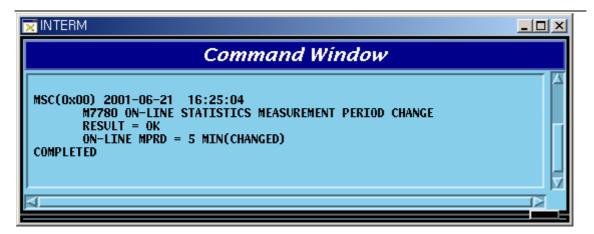


Fig. 4.7-28 Results of Changing On Line Statistics Period

# 4.8. Alarm/Fault Command

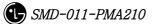
The fault function of BSM is configured into the following: displayed on the console window to the generated alarm and fault, displayed only at user's request to the 23items below.

Comment	Related Command
Displaying Inhibited Alarm List	DIS-INH-ALM;
Displaying Audible Alarm	DIS-AUD-STS;
Status	
Displaying Inhibited Fault List	DIS-INH-FLT;
Displaying Present Alarm	DIS-ALM-STS;
Status	
Displaying Suppressed Alarm	DIS-SUP-ALM;
Displaying Information about	DIS-ALM-INFO;
Alarm Message	
Displaying Alarm List	DIS-ALM-LIST;
Displaying Suppressed Fault	DIS-SUP-FLT;
Inhibiting Alarm Message	INH-ALM-MSG;
Display	
Inhibiting Audible Alarm	INH-AUD-ALM;
Inhibiting Fault Message	INH-FLT-MSG;
Display	
Suppressing Alarm Message	SUP-ALM-MSG;
Suppressing Fault Message	SUP-FLT-MSG;
Allowing Inhibited Alarm	ALW-ALM-MSG;
Message	
Allowing Inhibited Audible	ALW-AUD-ALM;
Alarm	
Allowing Inhibited Fault	ALW-FLT-MSG;
Message	
Releasing Suppressed Alarm	REL-ALM-MSG;
Message	

Table 4-4.8-1 Alarm/Fault Related Command List

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Releasin	g Suppressed	Fault	REL-FLT-MSG;
Message	2		
Displayir	ng Envir	onment	DIS-ENV-STS
Alarm			
Setting	Environment	Alarm	SET-ENV-FLAG
FLAG			
Setting	Environment	Alarm	SET-ENV-TIME
Time			
Setting	Environment	Alarm	SET-ENV-TEMP
Tempera	ature		
			SET-ENV-HUMI
			RST-ECV-STS
			CLR-ENV-HIST



# 4.8.1. Alarm/Fault Display

# 4.8.1.1. Display Command of Inhibited Alarm Message List

This is the command to display the list of the alarm message whose display is inhibited. Check the **Inhibit** status when the alarm to be generated is not generated; if it is not inhibited, check the **Suppress** status.

Table 4-4.8-2 The meaning of Input by BSC Number and BTS Number

BSC	BTS	Meaning
Input	Input	BTS
Input	Х	BSC
Х	Х	CAN
Х	Input	Input Error

\*Note) The applying scope of the table above equally applied to the Alarm/Fault related command.

- Command DIS-INH-ALM:[BSC=a],[BTS=b];
  - a : BSC Number(0 ~ 11)
  - b : BTS Number(0 ~ 47)
- Input DIS-INH-ALM:BSC=0;
- Display

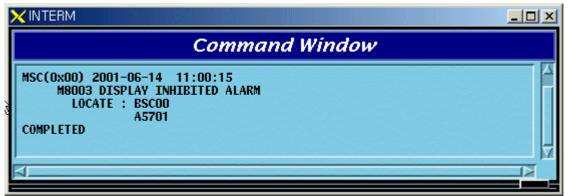


Fig. 4.8-1 Display Result of the Display Inhibited Alarm Message List

## 4.8.1.2. Display Command for the Audible Alarm Status

This command displays the alarm panel status, presently generated alarm status and inhibition status of the audible alarm.

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- Command DIS\_AUD-STS;
- Display

×INTERM	
Command Window	
MSC(0x00) 2001-06-14 11:22:49 M8006 DISPLAY INHIBIT AUDIO ALARM STATUS CRITICAL MAJOR MINOR INH/ALW STATUS : ALM_ON ALM_ON ALM_ON ALLOW COMPLETED	

Fig. 4.8-2 Display Result of the Display Command for Audible Alarm Status

### 4.8.1.3. Display Command for Inhibited Fault Message List

- This is the command for the display inhibited fault messages to display their list. If fault message to be generated were not generated this command would be needed to check the **Inhibit** status.
- Command DIS-INH-FLT:[BSC=a],[BTS=b];
  - a : BSC Number(0 ~ 11)
  - b : BTS Number(0 ~ 47)
- Input DIS-INH-FLT:BSC=0, BTS=1;
- Display



Fig. 4.8-3 Display Result of the List for the Display Inhibited Fault Message

#### **4.8.1.4. Display Command for the Present Alarm Status**

This is the display command for the information about the presently generated alarm. If the user would like to see the alarm code only, input nothing or OFF in the Detail Option.

• Command DIS-ALM-STS[:BSC=a],[BTS=b],[DETAIL=c];

- a : BSC Number(0 ~ 11)
- b : BTS Number(0 ~ 47)
- c : DETAIL Option(ON/OFF)
  - ON : Alarm Code + Alarm Info. + Alarm Generated Location

OFF: Alarm Code + Corresponding Alarm count(default)

(1) In the case of DETAIL = ON

- Input DIS-ALM-STS:BSC=0,BTS=0,DETAIL=ON;
- Display

Command Window
MSC(0x00) 2001-06-14 13:40:17 M8010 DISPLAY ALARM STATUS LUCATE : BSC00/BTS00 (MAJ) : A1500 BTS BCRA SINGLE ABNORMAL L0CATE : BSC00/BTS00/TSBR0/SHELF01/BCRA_B (B_OPEN) A1750 BTS RCPA SINGLE ABNORMAL L0CATE : BSC00/BTS00/TSBR0/SHELF02/RCPA_B (B_OPEN) A2000 BTS BSPU SINGLE POWER FAIL L0CATE : BSC00/BTS00/TSBR0/SHELF01/PSU_B (P_FAIL) A2710 BTS HPA POWER FAIL L0CATE : BSC00/BTS00/TSBR0/SHELF05/HPA00(ALPHA) (P_F L0CATE : BSC00/BTS00/TSBR0/SHELF05/HPA02(GAMMA) (P_F L0CATE : BSC00/BTS00/TSBR0/SHELF05/HPA02(GAMMA) (P_F L0CATE : BSC00/BTS00/TSBR0/SHELF05/HPA03(ALPHA) (P_F L0CATE : BSC00/BTS00/TSBR0/SHELF05/HPA03(C_OPEN) L0CATE : BSC00/BTS00/TSBR0/SHELF01/BADA (C_OPEN) L0CATE : BSC00/BTS00/TSBR0/SHELF01/RISA (C_OPEN) A0620 BTS ENVIRONMENT ALARM CABLE OPEN L0CATE : BSC00/BTS00/TSBR0/ENV (C_OPEN)

Fig. 4.8-4 Display Result of Display Command for the Present Alarm Status

(2) In the case of DETAIL = OFF

- Input DIS-ALM-STS:BSC=0,BTS=0,DETAIL=OFF;
- Display

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Command Window	
MSC(0x00) 2001-06-14 15:26:14 M8010 DISPLAY ALARM STATUS LOCATE : BSC00/BTS00 (MAJ) : A1500(01) A1750(01) A2000(01) A2710(05) (MIN) : A0600(03) A0620(01) COMPLETED	

Fig. 4.8-5 Display Result of Display Command for Present Alarm Status

### 4.8.1.5. Display Command for Suppressed Alarm Message

This is the command for suppress alarm message to be displayed.

- Command DIS-SUP-ALM:[BSC=a],[BTS=b];
  - a : BSC Number(0 ~ 11)
  - b : BTSNumber(0 ~ 47)
- Input DIS-SUP-ALM:BSC=0,BTS=0;
- Display

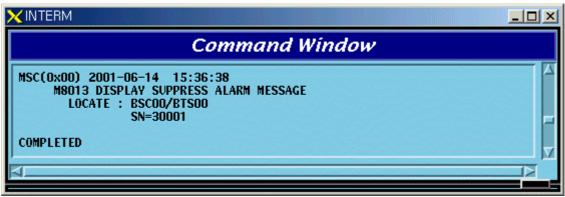


Fig. 4.8-6 Display Result of Display Command for the Suppressed Alarm Message

### 4.8.1.6. Display Command for the Information about Alarm Message

This is the command to display the defined grade of the alarm message and alarm message information.

- Command DIS-ALM-INFO:AN=a;
  - a : Alarm Code Number(100 ~ 9999)
- Input DIS-ALM-INFO:AN=1000; or DIS-ALM-INFO:1000;

• Display



Fig. 4.8-7 Display Result of Display Command for Information about the Alarm Message

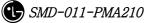
# 4.8.1.7. Display Command for Alarm List

This is the command to display the list for all kinds of alarm.

• Command DIS-ALM-LIST:[SUB-SYS=a];

a : Subsystem Name(CAN/BSC/BTS/ALL)

- Input DIS-ALM-INFO:CAN;
- Display



	Command Window	
	1-06-14 15:52:39	
	SPLAY ALARM LIST	
GRADE MAJ	INFORM A7500 CAN GPSR CONTROL CABLE OPEN	
MIN	A7600 CAN ALARM CABLE OPEN	
MIN	A7800 CAN RACK FAN FAIL	
MAJ	A8000 CAN GPSR SINGLE ABNORMAL	
CRI MAJ	A8001 CAN GPSR DUAL ABNORMAL A8050 CAN GPSD SINGLE ABNORMAL	
CRI	A8051 CAN GPSD DUAL ABNORMAL	
CRI	A8100 CAN RAPU ABNORMAL	
CRI	A8110 CAN RAPU LINK_OR_POWER FAIL	
MAJ CRI	A8500 CAN CNPA SINGLE ABNORMAL A8501 CAN CNPA DUAL ABNORMAL	
MAJ	A8550 CAN ASCA SINGLE ABNORMAL	
CRI	A8551 CAN ASCA DUAL ABNORMAL	
MAJ	A8560 CAN FERA SINGLE ABNORMAL	
CRI MAJ	A8561 CAN FERA DUAL ABNORMAL A8600 CAN PNPA SINGLE ABNORMAL	
CRI	A8601 CAN PNPA DUAL ABNORMAL	
CRI	A8700 CAN AMPA ABNORMAL	
MAJ CRI	A8710 CAN PCPA SINGLE ABNORMAL A8711 CAN PCPA DUAL ABNORMAL	
MAD	A8711 CAN PEPA DUAL ABNORMAL A8720 CAN PMPA SINGLE ABNORMAL	
CRI	A8721 CAN PMPA DUAL ABNORMAL	
MAD	A8730 CAN ENPA SINGLE ABNORMAL	
CRI MAJ	A8731 CAN ENPA DUAL ABNORMAL A8740 CAN BCRA SINGLE ABNORMAL	
CRI	A8740 CAN BERA DUAL ABNORMAL	
MAD	A8800 CAN PCPA 1PPS CLOCK FAIL	
MAD	A8810 CAN PCPA 10MHz CLOCK FAIL	
MAJ CRI	A8820 CAN FERA LINK FAIL A8840 CAN FERA PDSN LINK FAIL	
MAJ	A9000 CAN CAMU SINGLE POWER FAIL	
CRI	A9001 CAN CAMU DUAL POWER FAIL	
MAD	A9010 CAN PCFU(PCP) SINGLE POWER FAIL	
CRI MAJ	A9011 CAN PCFU(PCP) DUAL POWER FAIL A9020 CAN PCFU(PMP) SINGLE POWER FAIL	
CRI	A9021 CAN PCFU(PMP) DUAL POWER FAIL	
MAD	A9030 CAN ATSU SINGLE POWER FAIL	
CRI	A9031 CAN ATSU DUAL POWER FAIL	
MAJ CRI	A9040 CAN CPNU SINGLE POWER FAIL A9041 CAN CPNU DUAL POWER FAIL	
MAJ	ASO4T CAN COND DOAL POWER FAIL	
MAD	A9221 CAN ASIA DUAL ABNORMAL	
MAD	A9240 CAN AOTA BOARD DELETION	
MAD Mad	A9250 CAN AOTA FUNCTION FAIL A9260 CAN ATSA(ASMU) BOARD DELETION	
MAD	A9270 CAN ATSA(ASMU) FUNCTION FAIL	
MAD	A9300 CAN PIPA BOARD DELETION	
MAD	A9310 CAN PIPA FUNCTION FAIL	
MAD Mad	A9320 CAN FETA BOARD DELETION A9330 CAN FETA FUNCTION FAIL	
MAD	A9400 CAN ATSA(ATSU) BOARD DELETION	
MAD	A9410 CAN ATSA(ATSU) FUNCTION FAIL	
OMPLETED		

Fig. 4.8-8 Display Result of Display Command for the Information about Alarm List

## 4.8.1.8. Display Command for the List of the Suppressed Fault Message

This is the command to display the Fault Source Code List for the suppressed fault message.

- Command DIS-SUP-FLT:[BSC=a],[BTS=b];
  - a : BSC Number(0 ~ 11)
  - b : BTS Number(0 ~ 47)
- Input DIS-SUP-FLT:BSC=0,BTS=0;
- Display



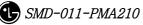
Fig. 4.8-9 Display Result of Display Command for the Suppress Fault Message List

# 4.8.2. Alarm/Fault Inhibition

## 4.8.2.1. Inhibition Command for Alarm Message

This is the function to inhibit the alarm message to be displayed on the console window. If any Alarm Code is not designated it inhibits the entire alarm message generated in the designated system.

- Command INH-ALM-MSG:[BSC=a],[BTS=b],[AN=c];
  - a : BSC Number(0 ~ 11)
  - $b : BTS_GRP Number(0 \sim 47)$
  - c : Alarm Code Number(0 ~ 9999)
- Input INH-ALM-MSG:BSC=0,AN=4600;
- Display



×INTERM	
Command Window	
MSC(0x00) 2001-06-14 17:21:12 M8001 INHIBIT ALARM MESSAGE : AN = 4600 LOCATE : BSC00 RESULT : OK - INHIBITED COMPLETED	



\*Note) AN : Alarm Number

## 4.8.2.2. Inhibition Command for Audible Alarm

The audible alarm can be inhibited by the grade and it is applied to all kinds of alarm.

- Command INH-AUD-ALM
- Display

× INTERM	
Command Window	
MSC(0x00) 2001-06-14 17:29:37 M8004 INHIBIT AUDIBLE ALARM RESULT : OK - INHIBITED COMPLETED	
। ব	

Fig. 4.8-11 Display Result of Inhibition Command for Audible Alarm

## 4.8.2.3. Inhibition Command for Fault Message

This is the function to inhibit the display of the fault message. If any fault code is not designated, it inhibits all the fault codes.

```
• Command INH-FLT-MSG:[BSC=a],[BTS=b],[FN=c];
a:BSC Number(0 ~ 11)
b:BTS Number(0 ~ 47)
```

- c : Fault Code Number
- Input INH-FLT-MSG:BSC=0,BTS=0,FN=1000;
- Display

	<u>_0×</u>
Command Window	
MSC(0x00) 2001-06-14 11:32:09 M8007 INHIBIT FAULT MESSAGE : FN = 1000 LOCATE : BSC00/BTS01 RESULT : OK - INHIBITED COMPLETED	
ସା <u></u>	

Fig. 4.8-12 Display Result of Inhibition/Allowance for Fault Message Display

## 4.8.2.4. Alarm Message Suppress Command

This command is used for the following cases: when previously checked alarm(by the user) is generating and burden BSM; when suppressing the report for the alarm message from subsystem in order to monitor other important message.

This is the command blocking the message itself for the unnecessary alarm contrary to the command (INH-ALM-MSG) which inhibits the alarm message to be displayed on the BSM console window.

- Command SUP-ALM-MSG:[BSC=a],[BTS=b],[SRC\_CODE=c];
  - a : BSC Number(0 ~ 11)
  - b : BTS Number(0 ~ 47)
  - c : Alarm Source Code Number(1 ~ 9999)
- Input SUP-ALM-MSG:BSC=0,BTS=0,SRC\_CODE=30001;
- Display

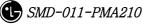




Fig. 4.8-13 Display Result of the Suppress Alarm Message Command

#### 4.8.2.5. Fault Message Suppress Command

This command is used for the following cases: when previously checked fault message(by the user) is generating and burden BSM; when suppressing the report for the fault message from subsystem in order to monitor other important message.

This is the command blocking the message itself for the unnecessary fault message contrary to the command (INH-FLT-MSG) which inhibits the fault message to be displayed on the BSM console window.

- Command SUP-FLT-MSG:[BSC=a],[BTS=b],[SRC\_CODE=c];
  - a : BSC Number(0 ~ 11)
  - b : BTS Number(0 ~ 47)
  - c : Fault Source Code Number(1 ~ 1000)
- Input SUP-FLT-MSG:BSC=0,BTS=0,SRC\_CODE=31001;
- Display

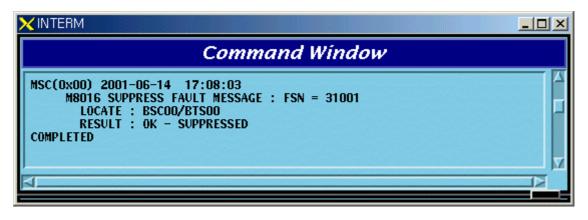


Fig. 4.8-14 Display Result for the Fault Message Suppress Command

# 4.8.3. Alarm/Fault Control

## 4.8.3.1. Allowance Command for Inhibited Alarm Message Display

This is the command to allow randomly inhibited alarm message for display by the user. If any specific alarm code is not designated, all the inhibited alarm code for display in the designated system is allowed.

- Command ALW-ALM-MSG:[BSC=a],[BTS=b],[AN=c];
  - a : BSC Number(0 ~ 11)
  - b : BTS Number(0 ~ 47)
  - c : Alarm Code Number(0 ~ 9999)
- Input ALW-ALM-MSG:BSC=0,AN=4600;
- Display

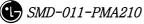
Command Window	
MSC(0x00) 2001-06-14 17:24:38 M8002 ALLOW ALARM MESSAGE : AN = 4600 LOCATE : BSC00 RESULT : OK - ALLOWED COMPLETED	

Fig. 4.8-15 Display Result of Allowance for Alarm Message Display Inhibition

## 4.8.3.2. Allowance Command for Inhibited Audible Alarm

This is the command to allow inhibited audible alarm.

- Command ALW-AUD-ALM
- Display



×INTERM	<u>_0×</u>
Command Window	
MSC(0x00) 2001-06-14 17:30:04 M8005 ALLOW AUDIBLE ALARM RESULT : OK - ALLOWED COMPLETED	Z Z
4	

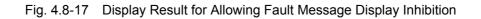
Fig. 4.8-16 Display Result of Allowance Command for Inhibited Audible Alarm

# 4.8.3.3. Allowance Command for Inhibited Fault Message Display

This is the command to allow randomly inhibited fault message by the user. If any specific alarm code is not designated, all the inhibited fault code for display is allowed.

- Command ALW-FLT-MSG:[BSC=a],[BTS=b],[FN=c];
  - a : BSC Number(0 ~ 11)
  - b : BTS Number(0 ~ 47)
  - c : Fault Code Number(1000 ~ 9999)
- Input ALW-FLT-MSG:BSC=0,BTS=1,FN=1000;
- Display

×INTERM	
Command Window	
MSC(0x00) 2001-06-15 10:08:15 M8008 ALLOW FAULT MESSAGE : FN = 1000 LOCATE : BSC00/BTS01 RESULT : OK - ALLOWED	



## 4.8.3.4. Release Command for Suppressed Alarm Message

This is the command to release randomly suppressed alarm message by the user. If there were any follow-up measures after suppressing and the suppressing is not needed any more, it is highly recommended to release the suppress by this command. If the alarm is not generated in the required situation the suppress matter should be checked.

- Command REL-ALM-MSG:[BSC=a],[BTS=b],[SRC\_CODE=c];
  - a : BSC Number(0 ~ 11)
  - b : BTS Number(0 ~ 47)
  - c : Alarm Source Code Number(1 ~ 9999)
- Input REL-ALM-MSG:BSC=0,BTS=0,SRC\_CODE=30001;
- Display

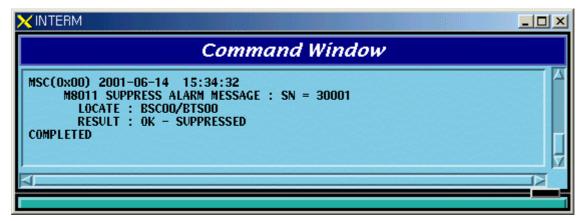


Fig. 4.8-18 Display Result of Release Command for Suppressed Alarm Message

#### 4.8.3.5. Release Command for Suppressed Fault Message

This is the command to release randomly suppressed fault message by the user. If there were any follow-up measures to the suppressed message and the suppressing is not needed any more, it is recommended to release the suppress by this command.

- Command REL-FLT-MSG:[BSC=a],[BTS=b],[SRC\_CODE=c];
  - a : BSC Number(0 ~ 11)
  - b : BTS Number( $0 \sim 47$ )
  - c : Fault Source Code Number(1 ~ 1000)
- Input REL-FLT-MSG:BSC=0,BTS=0,SRC\_CODE=31001;
- Display

X INTERM	<u>_ 0 ×</u>
Command Window	
MSC(0x00) 2001-06-14 17:08:03 M8016 SUPPRESS FAULT MESSAGE : FSN = 31001 LOCATE : BSC00/BTS00 RESULT : OK - SUPPRESSED COMPLETED	
4	

Fig. 4.8-19 Display Result of Release Command for Suppressed Fault Message

# **4.8.4. Environment Alarm Control 4.8.4.1. Environment Alarm Flag set Command**

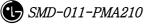
This is the command to decide (ON/OFF) whether to receive the alarm, which is sensed by the sensor of environment monitoring module, normally or not. ON means receiving the alarm normally and OFF means non-receiving the alarm.

• Command SET-ENV-FLAG:[BSC=a],[BTS=b],[CMD=c],[FLAG=d];

- a : BSC Number(0 ~ 11)
- b : BTS Number(0 ~ 47)
- c : Command
- d : Flag(ON/OFF)
- Input SET-ENV-FLAG:
- Display

MSC(0x00) date time M8030 SET ACU FLAG : a LOCATE = b RESEON = c

> a : RECTIFIER\_SHUT\_DOWN\_ALARM FIRE UPPER\_FLOOD LOWER\_FLOOD TEMPERATURE1 TEMPERATURE2



**TEMPERATURE3** TEMPERATURE\_CENTIGRADE\_OPTION HUMIDITY b: Locate Information c: #PROC\_NOT\_EQUIP ##PROC\_ABNORMAL ##THIS COMMAND IS IN SERVICE ##NOK - BTS TYPE MISMATCH ##NOK - BAMA ABNORMAL ##NOK - ACU ABNORMAL ##NOK - RECTIFIER ABNORMAL ##NOK - BAMA NO RESPONSE ##NOK - ACU or REC NO RESPONSE ##NOK - ALREADY SET FLAG ON ##NOK - ALREADY SET FLAG OFF ##NOK - UNKNOWN REASON ##OK - SET FLAG COMPLETED

#### 4.8.4.2. Environment Alarm Reset Command

This is the reset command for environment monitoring module and the rectifier.

- Command RST-ENV-STS:[BSC=a],[BTS=b],[CMD=c];
  - a : BSC Number(0 ~ 11)
  - b : BTS Number(0 ~ 47)
  - $c \ : \ Command$
- Input RST-ENV-STS:
- Display

MSC(0x00) date time M8031 RESET ACU STATUS : a LOCATE = b RESEON = c

a : ACU\_COLD\_BOOT ACU\_RESET RECTIFIER\_POWER\_TURN RECTIFIER\_CONTOROLLER\_RESET  $b: Locate \ Information$ 

c : ##PROC\_NOT\_EQUIP

##PROC\_ABNORMAL

##THIS COMMAND IS IN SERVICE

##NOK – BTS TYPE MISMATCH

##NOK - BAMA ABNORMAL

##NOK – ACU ABNORMAL

##NOK - RECTIFIER ABNORMAL

##NOK - BAMA NO RESPONSE

##NOK - ACU or REC NO RESPONSE

##NOK - UNKNOWN REASON

##OK - RESET COMPLETED

## 4.8.4.3. Environment Alarm History Clear Command

This is the command to clear all the history stored in the environment monitoring module.

• Command CLR-ENV-HIST:[BSC=a],[BTS=b],[CMD=c];

a : BSC Number(0 ~ 11)

b : BTS Number(0 ~ 47)

- c : Command
- Input CLR-ENV-HIST:
- Display

MSC(0x00) date time M8032 HISTORY CLEAR : a LOCATE = b RESEON = c

a : OP HISTORY RUNNING HISTORY

b: Locate Information

c : ##PROC\_NOT\_EQUIP ##PROC\_ABNORMAL ##THIS COMMAND IS IN SERVICE ##NOK - BTS TYPE MISMATCH ##NOK - BAMA ABNORMAL ##NOK - ACU ABNORMAL

##NOK - RECTIFIER ABNORMAL

##NOK - BAMA NO RESPONSE

##NOK - ACU or REC NO RESPONSE

##NOK - UNKNOWN REASON

##OK - CLEAR HISTORY COMPLETED

#### 4.8.4.4. Time Set Command

This is the command to set time (year/month/date/hour/minute/second) built in environment monitoring module.

```
Command SET-ENV-TIME:[BSC=a],[BTS=b],[YEAR=c],[MONTH=d],[DAY=e],
[HOUR=f],[MINUTE=g],[SECOND=h];
a : BSC Number(0 ~ 11)
b : BTS Number(0 ~ 47)
c : Year(1990 ~ 2049)
d : Month(1 ~ 12)
e : Day(1 ~ 31)
f : Hour(0 ~ 23)
g : Minute(0 ~ 59)
h : Second(0 ~ 59)

Input SET-ENV-TIME:
```

MSC(0x00) date time M8033 SET ACU DATE AND TIME LOCATE = a RESEON = b

a : Locate Information

b: #PROC\_NOT\_EQUIP
##PROC\_ABNORMAL
##THIS COMMAND IS IN SERVICE
##NOK - BTS TYPE MISMATCH
##NOK - BAMA ABNORMAL
##NOK - ACU ABNORMAL
##NOK - RECTIFIER ABNORMAL

##NOK - BAMA NO RESPONSE ##NOK - ACU or REC NO RESPONSE ##NOK - UNKNOWN REASON ##OK - SET ACU TIME COMPLETED

#### 4.8.4.5. Temperature Set Command

This is the command to set the temperature (high/low/middle)'s threshold value of which the environment monitoring module takes control. If the temperature surpasses the set threshold value, the alarm is generating.

• Command SET-ENV-TEMP:

```
[BSC=a],[BTS=b],[HI_TEMP=c],[LOW_TEMP=d],[MID_TEMP=e];
```

- a : BSC Number(0 ~ 11)
- b : BTS Number(0 ~ 47)
- c : High Temperature(0 ~ 200)
- d : Low Temperature(-20 ~ 200)
- e : Middle Temperature(-20 ~ 200)
- Input SET-ENV-TEMP:
- Display

MSC(0x00) date time M8034 SET ACU ALARM VALUE TEMPERATURE(HIGH/LOW/MIDDLE) LOCATE = a RESEON = b

a : Locate Information

```
b:##PROC_NOT_EQUIP
##PROC_ABNORMAL
##THIS COMMAND IS IN SERVICE
##NOK - BTS TYPE MISMATCH
##NOK - BAMA ABNORMAL
##NOK - ACU ABNORMAL
##NOK - RECTIFIER ABNORMAL
##NOK - BAMA NO RESPONSE
##NOK - ACU or REC NO RESPONSE
##NOK - UNKNOWN REASON
##OK - SET ACU TEMPERATURE COMPLETED
```

### 4.8.4.6. Humidity Set Command

This is the command to set the threshold value of humidity of which the environment monitoring module takes control. If humidity surpasses this threshold value, the alarm is generating.

- Command SET-ENV-HUMI:[BSC=a],[BTS=b],[HI\_HUMI=c];
  - a : BSC Number(0 ~ 11)
  - b : BTS Number(0 ~ 47)
  - c : High Humidity(0 ~ 100)
- Input SET-ENV-HUMI:
- Display

MSC(0x00) date time M8035 SET ACU HIGH HUMIDITY ALARM LIMITS VALUE LOCATE = a RESEON = b

- a : Locate Information
- b: ##PROC\_NOT\_EQUIP
  ##PROC\_ABNORMAL
  ##THIS COMMAND IS IN SERVICE
  ##NOK BTS TYPE MISMATCH
  ##NOK BAMA ABNORMAL
  ##NOK ACU ABNORMAL
  ##NOK RECTIFIER ABNORMAL
  ##NOK BAMA NO RESPONSE
  ##NOK ACU or REC NO RESPONSE
  ##NOK UNKNOWN REASON
  - ##OK SET ACU HUMIDITY COMPLETED

### 4.8.4.7. Environment Alarm Display Command

This is the command to display the parameter value, flag status, history and other things presently stored in the environment monitoring module.

```
• Command DIS-ENV-STS:[BSC=a],[BTS=b],[CMD=c],[RECORD_NO=d];
```

- a : BSC Number(0 ~ 11)
- b : BTS Number(0 ~ 47)
- $c \ : \ Command$
- d : Record Number(0 ~ 500)
- Input DIS-ENV-STS:
- Display

```
MSC(0x00) date time
     M8036 DISPLAY ACU STATUS : a
     LOCATE = b
     TIME : c
     CURRENT : d
     e – f
       - h
     g
     i –
     j
        _
     k - m l - n
     k - m l - n
     RECORD_NO: END_TRANSMIT: o
     ACTION = p ACTOR/STATE = q
     CANCELLATION = r
     REASON = s
```

- A:Command
- B: Locate Information
- C : ACU TIME
- D : CURRENT TEMPERATURE AND HUMIDITY
- E:##HIGH TEMPERATURE

##LOW TEMPERATURE
##HIGH HUMIDITY
f:##ALARM OFF
##ALARM ON
g : ##RECTIFIER SHUT DOWN ALARM
##TEMPERATURE CENTIGRADE OPTION
##FIRE
##UPPER FLOOD
##LOWER FLOOD
##TEMPERATURE1
##TEMPERATURE2
##TEMPERATURE3
##HUMIDITY
h:##OFF
##ON
I : ##HIGH TEMPERATURE
##LOW TEMPERATURE
##MIDDLE TEMPERATURE
##HIGH HUMIDITY
j:##TEMPERATURE1
##TEMPERATURE2
##TEMPERATURE3
##HUMIDITY
##AC VOLTAGE
##DC VOLTAGE
##DC ELECTIRIC CURRENT
##RECTIFIER UNIT FAIL
##BATTERY ELECTRIC
##H/E EXTERNAL FAN RPM
##H/E INTERNAL FAN RPM
k :
m:##FIRE
##UPPER FLOOD
##LOWER FLOOD
##TEMPERATURE1
##TEMPERATURE2
##TEMPERATURE3

##HUMIDITY

##RECTIFIER CABLE OPEN ##FAN CABLE OPEN ##FAN POWER FAIL ##FAN FAIL ##HEAT EXCHANGER POWER FAIL ##HEAT EXCHANGER FAIL ##AC EQUIPMENT HEATER FAIL ##AC BATTERY HEATER FAIL ##FRB DOOR OPEN ##BATTERY DOOR OPEN ##AC FAIL ##HIGH VOLTAGE ##LOW VOLTAGE ##BATTERY LOW VOLTAGE ##MDMC MODULE ERROR ##REC UNIT FAIL ##FUSE RELAY LOSS ##REC ACU COMMUNICATION FAULT ##DC DC FAIL

1:

- n:##NORMAL
  - ##OCCUR

##FAIL

##HIGH

##LOW

##ACTIVE

- o : ##NOT END ##END RECORD
- p: ACTION INFORMATION
- q: ACTOR INFORMATION
- r : CANCEL INFORMATION
- s : ##PROC\_NOT\_EQUIP ##PROC\_ABNORMAL ##THIS COMMAND IS IN SERVICE ##NOK - BTS TYPE MISMATCH ##NOK - BAMA ABNORMAL

- ##NOK ACU ABNORMAL
- ##NOK RECTIFIER ABNORMAL
- ##NOK BAMA NO RESPONSE
- ##NOK ACU or REC NO RESPONSE
- ##NOK UNKNOWN REASON

# 4.9. Operation through GUI

# 4.9.1. Manager Window.

### 4.9.1.1. Overview.

GUI manager window is the GUI main window managing GUI applications and communicates with MMI block to exchange GUI information.

# 4.9.1.2. Operation.

Locate mouse indicator onto the button to display the name of corresponding application; the pressed button means the corresponding application is on the run; the application presently not on the run is presented as selectable button status.

# 4.9.1.3. Suggestions.

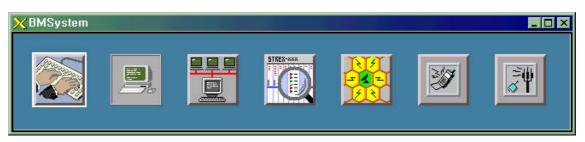


Fig. 4.9-1 Manager window

The MMI should be normally on the run because the manager is interworking with the MMI block.

By accessing X-Window Pixmap file, the XPM file should exist in the XPM directory in the run file directory, or else, 'XPM open file Error!' is displayed and all the block of the GUI can not be run. Otherwise, if any program that use color palette such as 'Netscape' is running, it might not be run because it could not get the palette. It is recommended using bitmap plane over 16bit to use GUI on the BSM.

# 4.9.2. Interm Window

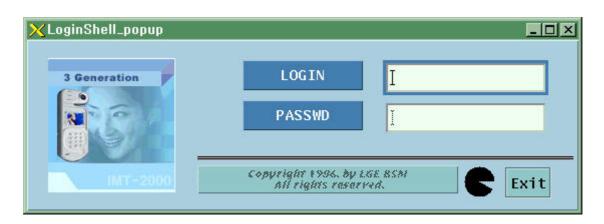
## 4.9.2.1. Overview.

The interm is controlled by the manager; manages the user information and command Input/Output.

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#### 4.9.2.2. Login.

The login window is displayed as a initial screen and it gets input the user ID and password. The user should finish the process in 1minute by entering the login ID and password. If the password is not entered after entering the login ID the system performs logout automatically to make the user unable to use the user command input window.





## 4.9.2.3. Window Configuration.

It is divided into command result display window, menu bar and command input window; command processing time content is displayed on the window and COMPLETED is displayed at the end of the display window.

The menu bar is consisted of commands into the following order: MMI related command, Loading related command, configuration related command, status related command, test related command, NO.7 related command, statistics related command, alarm related command and PREVIOUS menu that execute the command previously executed.

The prompt should be displayed on the screen in case the input window of lower part is in standby status, and when the communication with CA of MMI is disconnected the prompt is not displayed.

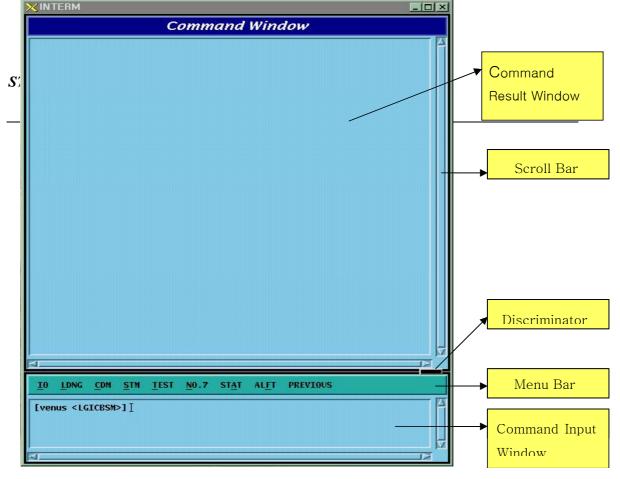


Fig. 4.9-3 Interm Configuration.

The line between the display window and the input window is a discriminator which can adjust rate of input and display windows by dragging the button on the upper side with mouse pointer. The display window by the command supports the popup menu to adjust the display environment. It is divided into background color, text color, text font, text size, and finish; press button 3 to pop up menu and then user can operate it. The underlined letter in the pull down menu operation is the accelerator letter. Choosing Meta + letter, the user can operate it immediately. If the user chooses the utmost part with dotted line in the menu, the system offers Tear-Off function to operate menu independently.

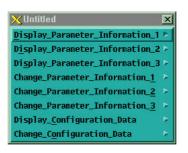


Fig. 4.9-4 CDM Tear-off

### 4.9.2.4. Operation Command and Usage.

All commands are available in the pop-up menu with mouse as followed and also available by inputting command manually on the INPUT WINDOW depending upon command grammar like using shell command in UNIX.

### 4.9.2.4.1. Command Input Method using POP-UP MENU

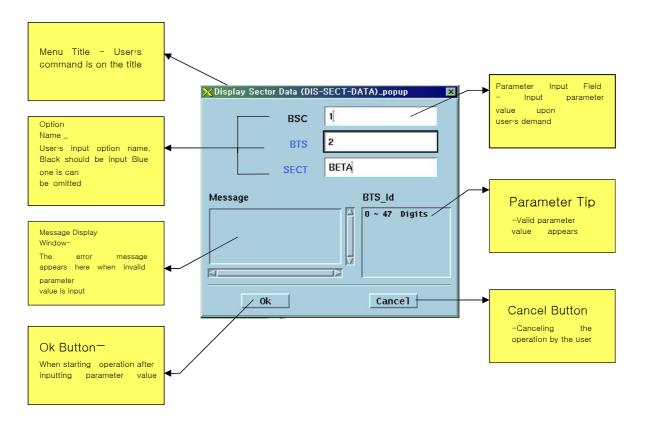


Fig. 4.9-5 POP-UP window

# 4.9.3. Batch Job

It is the function to make commands operate depending on the set value by reserving the MMC at the user's definition for the user's convenience.

### 4.9.3.1. Batch Job Window Configuration

The window is divided into the following three parts by the characteristics of the work: batch job set part, batch job list and command list, menu part.

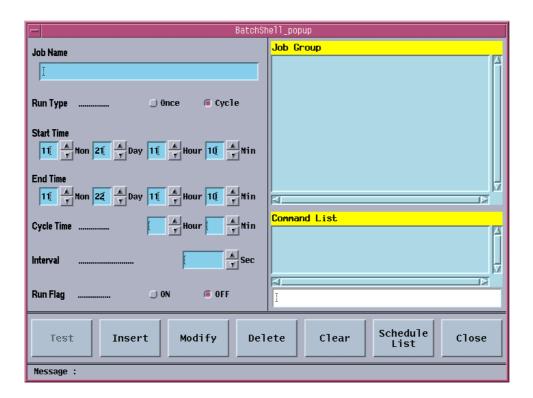


Fig. 4.9-6 Batch Job Screen

### 4.9.3.2. Run Batch Job

The batch job menu is included in the IO sub-menu, and just one batch job can be executed in one workstation. If the batch job is authorized, the menu is displayed in the executable status; if the batch job is already under execution the system prevents the overlapping of the work by making the menu 'Disable'. That is, the menu can be run on the interm run with bim; the menu always is 'Disable' upon remote access using telnet or rlogin; the menu can be run upon client access using the pcsnet because it uses local DB.

# 4.9.3.3. Batch Processing Set Area

#### Job Name

It is the name of the work to be set and added into the Job Group when storing. The maximum length of the name is restricted into 40 letters.

#### Run Type

Set if the work to be operated with a cycle, or at the specific time. (ONCE, CYCLE)

#### Start Time

It is the starting time of the work and the present time of the system is filled in the data field as a basic value.

#### End Time

It is the ending time of the work and the next date for the present time of the system is filled in the data field as a basic value. If the ending time has passed the present time it takes the Run Flag off.

#### Cycle Time

It designates the hour and minute to execute the next command when the Run Type is set as Cycle.

### <u>Interval</u>

It is the time between each command represented in seconds (1~6000) when several commands are input in single work name. Interval over 5sec is recommended.

### <u>Run Flag</u>

It represents whether the set batch processing is executed. (ON, OFF)

List Area

### Job Group

It is the list of registered works and the key value, which controls DB.

### Command List

It is the list of commands for single work. Maximum four commands can be input.

### Command Input Text Field

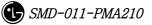
It is the field on which the command is input.

# 4.9.3.4. Menu Field

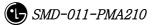
#### <u>Test</u>

It is the menu to test if the command for the presently selected work or the work for which the input is performed is input without error.

<u>Insert</u>



It is the menu to input new work.



# <u>Modify</u>

It is the menu to modify the previously input work.

# <u>Delete</u>

It is the menu to delete the input work or the command in the command list.

# <u>Clear</u>

It is the menu to remove the values left in the data field.

## Schedule List/Setup Screen

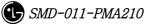
It shows the schedule list presently on the execution standby status.

### Exit/Close

It is the menu to close the batch job window.

# 4.9.3.5. Message Display Area

Error message on operation and messages for alarm and status change are displayed.



### 4.9.3.6. Batch Job Operation

#### 4.9.3.6.1. Open Window

Select IO menu of "INTERM", which is command I/O window, and click Batch Job then the window is opened.

#### 4.9.3.6.2. Job Input

Job name is the key value that controls DB so it should be the one and only value. When selecting insert menu it would not be stored unless the job name is input. The data field restricts the number of letters when inputting the data; emits alarm sound when it is exceeded. The figure input part is configured with the field in which the figure can be input manually and the buttons that change the figures. The maximum and minimum value is designated so if the figure exceeds this scope, it is set as a minimum value; if a letter is input the system emits alarm sound. After one command is input in the command input field, press 'Enter' key then it added into the command list. If a wrong command is added, select the list and press 'Delete' menu then it will be deleted.

- BatchSh	ell_popup
Job Name	Job Group
Vser Information	l III
Run Type 🗇 Once 🔎 Cycle	
Start Time 11 A Mon 21 A Day 11 A Hour 10 A Min	
End Time 14 A Mon 30 A Day 0 A Hour 0 A Min	
Cycle Time 12 Albur 0 Albur	Command List DIS-USR-INF0; DIS-CMD-HIS;
Interval 10 According Sec	
Run Flag @ ON 🗇 OFF	DIS-CMD-HIS]
Test Insert Modify Del	ete Clear Schedule Close
Message :	

Fig. 4.9-7 Batch Job Input

After the input is completed, check if it is set with correct values and choose 'Insert' menu.

### 4.9.3.6.3. Job Modifying

The job modification takes the same method with the input but the job name operates the key of DB cannot be modified.

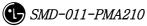
- BatchSt	nell_popup
Job Name	Job Group
User Information	User Information
Run Type Once @ Cycle	
Start Time 11 A Mon 21 A Day 11 A Hour 10 A Min	
End Time 12 A Mon 30 A Day 0 A Hour 0 A Min	K K
Cycle Time 12 🛉 Hour 🐧 🔺 Min	Conmand List DIS-USR-INF0;
Interval	DIS-CMD-HIS;
Run Flag @ ON 💭 OFF	DIS-CMD-HIS
Test Insert Modify Del	ete Clear Schedule Close
Message :	

Fig. 4.9-8 Batch Job Modification

After modifying, input 'Modify' menu by all means, so as that the modification is completed.

### 4.9.3.6.4. Job Deletion

Use 'Delete' menu with great care because it has two functions: deleting job group and deleting command list. Choose 'Delete' menu after selecting job group list then the chosen job will be deleted; press 'Delete' menu after selecting command group then the command will be deleted. Choose 'Modify' once more when deleting command so as to delete the command completely and store the content into the DB.



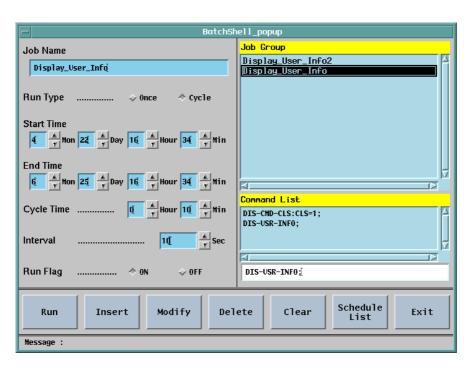


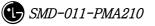
Fig. 4.9-9 Batch Job Deletion

# 4.9.3.6.5. Job Status Display

This menu shows the set jobs with their schedule. This menu shows setup window and schedule list by converting them with toggle method.

-		BatchShell_popup		
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	User Information User Information	[ DIS-USR-INF0; ] [ DIS-USR-INF0; ] [ DIS-CMD-HIS; ] [ DIS-CMD-HIS; ] [ DIS-CMD-HIS; ] [ DIS-USR-INF0; ] [ DIS-USR-INF0; ] [ DIS-USR-INF0; ] [ DIS-USR-INF0; ] [ DIS-USR-INF0; ] [ DIS-USR-INF0; ] [ DIS-CMD-HIS; ] [ DIS-USR-INF0; ] [ DIS-CMD-HIS; ] [ DIS-CMD-HIS; ]		
Test	ert Modify	Delete Clear	Setup Screen	Close
Message :				





# 4.9.4. Console Window

# 4.9.4.1. Overview

It is the window displaying event list of processor and also displays status change alarm and alarm information.

XOUTERM	- 🗆 ×
Console Window	
COMPLETED	
MSC(0x00) 2001-06-15 11:38:02 S3012 BPP STATUS CHANGE LOCATION = BSC01/BTS00/BPP PREVIOUS : ABNM CURRENT : NORM COMPLETED	
MSC(0x00) 2001-06-15 11:38:26 *** A8501 CAN CNPA DUAL ABNORMAL LOCATE : CAN/CANRO/SHELF01/CNPA_A INFORM : FUNCTION_FAIL, SOURCE12007 COMPLETED	
MSC(0x00) 2001-06-15 11:38:26 A8501 CAN CNPA DUAL ABNORMAL CLEARED LOCATE : CAN/CANRO/SHELF01/CNPA_A INFORM : FUNCTION_FAIL, SOURCE12007 COMPLETED	
MSC(0x00) 2001-06-15 11:38:26 S3005 CCP STATUS CHANGE LOCATION = BSC00/CCP ACT_SIDE A_STS B_STS PREVIOUS A NORM ABNM CURRENT A NORM NORM COMPLETED	
MSC(0x00) 2001-06-15 11:38:50 ** A5710 BSC SCPA SINGLE ABNORMAL LOCATE : BSC00/BNCR0/SHELF01/SCPA_B INFORM : FUNCTION_FAIL, SOURCE23004 COMPLETED	
MSC(0x00) 2001-06-15 11:38:50 A5710 BSC SCPA SINGLE ABNORMAL CLEARED LOCATE : BSC00/BNCR0/SHELF01/SCPA_B INFORM : FUNCTION_FAIL, SOURCE23004 COMPLETED	
MSC(0x00) 2001-06-15 11:39:02 S3005 CCP STATUS CHANGE LOCATION = BSCOU/CCP ACT_SIDE A_STS B_STS PREVIOUS A NORM NORM CURRENT A NORM ABNM	
	N N

Fig. 4.9-11 Console Window

# 4.9.4.2. Operation

The console window displays system message, supports pop-up menu and its display environment is adjustable. It is divided into background color, text color, text font, text size and close; press mouse button 3 to operate this function then the operating menu pops up. The number of message to be displayed is uncertain depending upon system load but roughly 400 through 800 messages can be displayed per second.

# 4.9.5. Controller

# 4.9.5.1. Overview

As the GUI gets complicated and varied the control for GUI is needed. Therefore, place a controller to control the entire GUI with close relation to their connection. Furthermore, due to the supply of network environment the user can access to a system more easily; the control is more complicated; monitor equipment to monitor and control them is needed; so the equipment to control the network and message display is developed.

The controller manages the host accessing to BMS Server; controls the display message of BSC, BTS, and Message Type; is in charge of process management.

# 4.9.5.2. Operation

Press ctrl among the buttons in Manager to start operation.



Fig. 4.9-12 ctrl Start Icon

Then the following screen is displayed.

The controller is divided into two parts of network control and message control.

Exit	Change Remove				
ost	IP_Address	User	Class	BSC_ID 0 4 16 4	Opened Windows
ism0	150.150.53.96	LGICBSM	1		
ioda	150.150.62.216		-		
ltra60	150.150.53.64	LGICBSM	- 1 1 1	BTS_ID 0 4 64 A	
igkim	150.150.62.11	LGICBSM	1		Allow and second
DM	192.168.53.71	LGICBSM	1		Manager Window Command Window
ileea	150.150.62.92	LGICBSM	1		Console Window
ism1	150.150.53.32	LGICBSM	1		Controller Window
ISM	150.150.53.82	LGICBSM	1	Message Type	
enus	150.150.62.89	LGICBSM	1	ALARM	
				FAULT	
				ETC	
				ALL I	

Fig. 4.9-13 Controller Window

# 4.9.5.3. Message Filtering

The message control function is only supplied to the host, and it can filter and display the message of particular BTS or specific part. The message type is sorted into ALARM, FAULT, STATUS, and ETC. If the message type is not defined display the 'all message display'.

lost	IP_Address	User C	lass	DCC TR	d I		6 🔼	Opened Windows
bsm0	150.150.53.96	LGICBSM	1	BSC_ID	<u>v</u>			
moda	150.150.62.216		-	070 TR	a l			
ultra60	150.150.53.64	LGICBSM	1	BTS_ID	ų į	× 6		
hgkim	150.150.62.11		Ask_Chang	e_popup	X		and the second second	Manager Window
PDM	192.168.53.71	LGIUBSM						Command Window
jileea	150.150.62.92	LGICBSM Do	you want to	o change ?				Console Window
bsm1	150.150.53.32				- Tu			Controller Window
bsm Venus	150.150.53.82 150.150.62.89	LGICBSM						
/enus	130+130+02+03	LGIGDON	Yes No	Help	AR			
					' µ	.Т		
					STATI	US		
					ETC	2		
				F	ALL			

Fig. 4.9-14 Message Filtering of Controller

# 4.9.5.4. Network Management

The network control is the function provided by the BMS server and supplies the following functions: checking the host name of presently accessed client, address, user,

user's grade, and message display information and compulsory expulsion of them. The client can display the hosts presently in operation but cannot control the other users except its host.

Exit	Change Remove			
lost	IP_Address	User Class	BSC_ID 0 4 16 4	Opened Windows
bsm0	150.150.53.96	LGICBSM 1		
noda	150.150.62.216			
ultra60	150.150.53.64	LGICBSM 1	BTS_ID 0 2 64 2	
hgkim	150.150.62.11	LGICBSM XAsk_Chan		Hennegen Minder
PDM	192.168.53.71	LUIUBSM		Manager Window Command Window
jileea	150.150.62.92	LGICBSM Do you want	to remove ?	Console Window
bsm1	150.150.53.32		Type	Controller Window
bsm	150.150.53.82	LGICBSM		
venus	150.150.62.89	LGICBSM Yes 1	No Help ARM	
			ETC	
			1 (730 C	
			ALL	
	Host: Server	[bsm0] Local[venus]	Path:	/home/vxWorks/T5.1/e

Fig. 4.9-15 Network Management of Controller

# 4.9.5.5. Suggestions

This program refers to the /etc/hosts file, so IP\_Address, Domain\_name, and Alais\_name should be correctly recorded fit for the network configuration information.

# 4.9.6. Status Window (stmGUI)

# 4.9.6.1. Overview

The user can use the MMC (DIS-\*-STS, DIS-\*-ALM, DIS-\*-FLT) to investigate the status of processor, board and alarm occurrence in each BSC/BTS. However, the user should keep on inputting commands with keyboard or mouse to check it on real-time; moreover, it is hard for the user to grasp the whole situation at one sight; therefore, the system takes advantage of the GUI(Graphic User Interface) to help the user in operation and for the more efficient system management.

# 4.9.6.2. Environment Setup

Solaris 2.7 and CDE library are used to develop the BMS as the OS and Graphic library. Moreover the Window Manager is set to be performed under CDE (Common Desktop Environment). Therefore, the user would be in a good operational environment if he operates the system on the environmental ground above (refer to the set and

environment set).

### 4.9.6.2.1. Suggestions

LD\_LIBRARY\_PATH is one of the most important environment variables. The stmGUI could be down during the operation unless the user let the stmGUI search /usr/X11R5/lib first of all.

e.g.) setenv LD\_LIBRARY\_PATH /usr/dt/lib/:usr/openwin/lib/:/usr/lib

### 4.9.6.2.2. Data Files

If the stmGUI is unable to be run, the needed data files could be non-existed. Therefore, check if the following files are in the DATA/GUI Directory.

RACK.DAT : file contains the shape of RACK .
SHELF.DAT : file contains the shape of SHELF.
PROCESS.DAT: definition file of the processors.
\*.xpm : drawing files needed in screen processing.
bts\_name.info : files contain BTS name.

