



Fig. 4.4-24 Result of SLPA BLOCK Command

#### 4.4.4.8. SLPA UNBLOCK Command

Function to unblock SLPA.

Command : UBLK-SLPA:BSC=a,SMP=b,SLPA=c,[SLV=d];

a : BSC Number(00~11)

b : SMP Number(00~04)

c : SLPA Number(00~17)

d : SLV Number(00~03)

Input : UBLK-SLPA:BSC=0,SMP=0,SLPA=0,SLV=0;

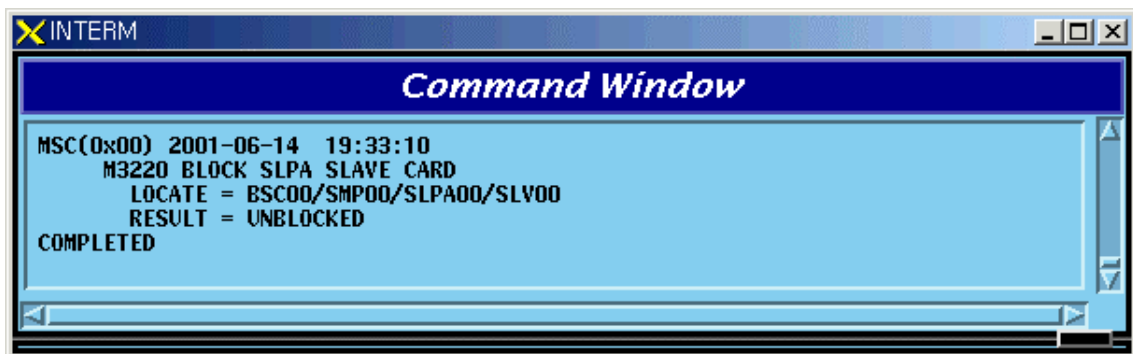


Fig. 4.4-25 Result of SLPA UNBLOCK Command

#### 4.4.4.9. VCPA BLOCK Command

Function to block VCPA.

Command : BLK-VCPA:BSC=a,VMP=b,VCPA=c,[SLV=d],[DSP=e];

a : BSC Number(00~11)

- b : VMP Number(00~07)
- c : VCPA Number(00~15)
- d : SLV Number(00~01)
- e : DSP Number(00~03)

Input : BLK-VCPA:BSC=0,VMP=0,VCPA=0,SLV=0,DSP=0;

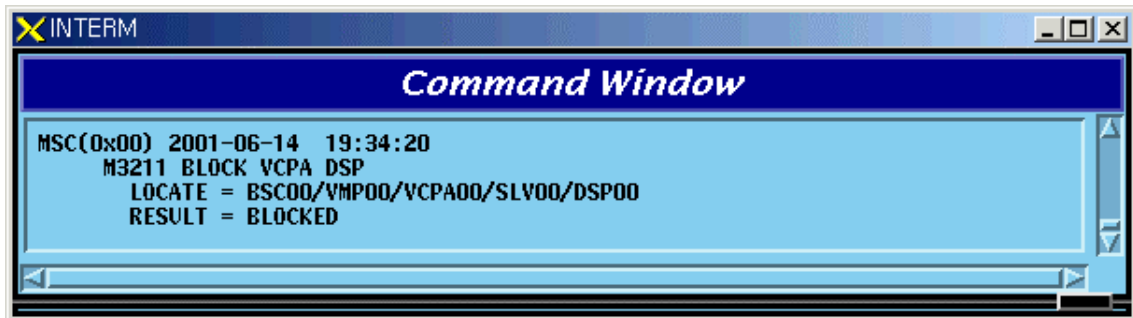


Fig. 4.4-26 Result of VCPA BLOCK Command

#### 4.4.4.10. VCPA UNBLOCK Command

Function to unblock VCPA

Command : UBLK-VCPA:BSC=a,VMP=b,VCPA=c,[SLV=d],[DSP=e];

- a : BSC Number(00~11)
- b : VMP Number(00~07)
- c : VCPA Number(00~15)
- d : SLV Number(00~01)
- e : DSP Number(00~03)

Input : UBLK-VCPA:BSC=0,VMP=0,VCPA=0,SLV=0,DSP=0;

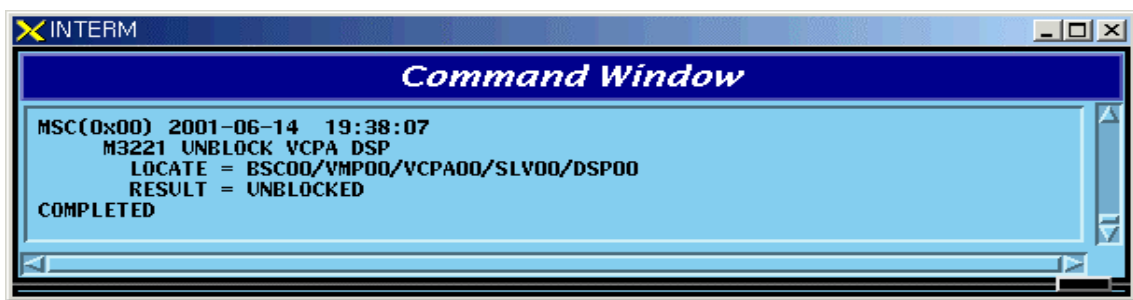


Fig. 4.4-27 Result of VCPA UNBLOCK Command

#### 4.4.4.11. VLIA BLOCK Command

Function to block VLIA.

Command : BLK-VLIA:BSC=0,VMP=0,VLIA=0,[E1=0],[TS=1];

- a : BSC Number(00~11)
- b : VMP Number(00~07)
- c : VLIA Number(0~1)
- d : E1 Number(00~15)
- e : TS Number(00~31)

Input : BLK-VLIA:BSC=0,VMP=0,VLIA=0,E1=0,TS=1;

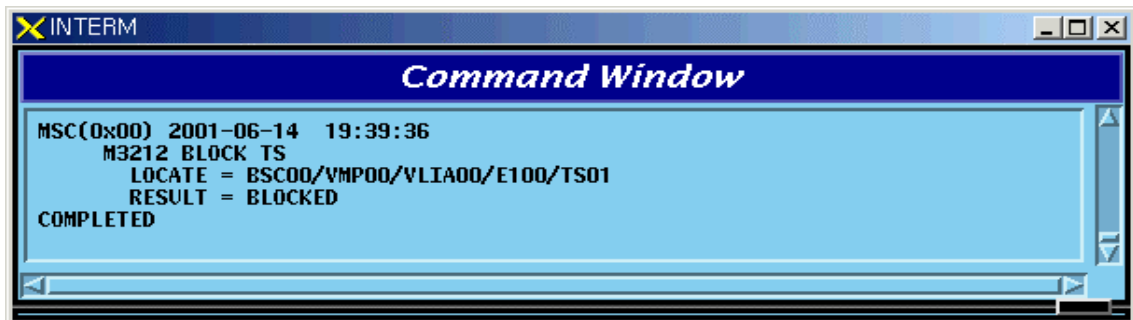


Fig. 4.4-28 Result of VLIA BLOCK Command

#### 4.4.4.12. VLIA UNBLOCK Command

Function to unblock VLIA

Command : UBLK-VLIA:BSC=0,VMP=0,VLIA=0,[E1=0],[TS=1];

- a : BSC Number(00~11)
- b : VMP Number(00~07)

c : VLIA Number(0~1)

d : E1 Number(00~15)

e : TS Number(00~31)

Input : UBLK-VLIA:BSC=0,VMP=0,VLIA=0,E1=0,TS=1;

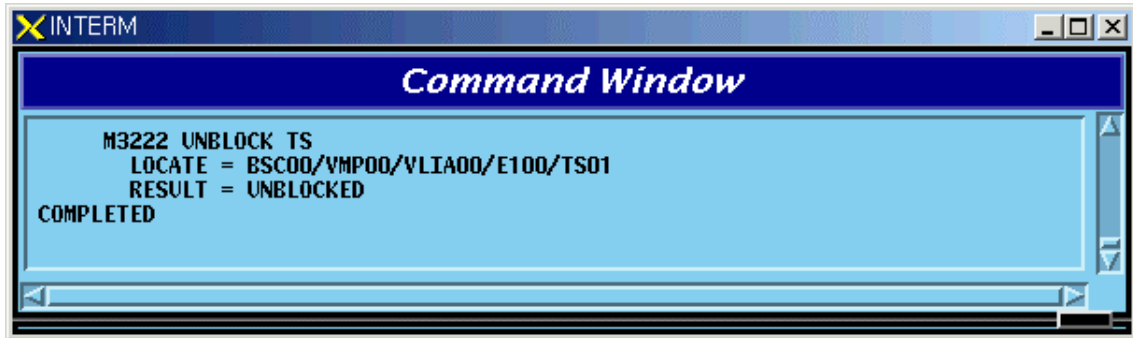


Fig. 4.4-29 Result of VLIA UNBLOCK Command

#### 4.4.4.13. H/W RESET BSC Device Command

Function to reset BSC Device on H/W Level.

Command : RMT-BSC-DEV:BSC=a,PROC=b,DEV=c,ID=d,[SUBID=e],CLS=f;

a : BSC Number(00~11)

b : Processor Name(NCP,SCP,ALP,SMP(00~05),VMP(00~07))

c : Device Name(SLPA,VCPA,VLIA,STIA,ASCA,ASIA,AOTA,ATSA,ALMA)

d : Device ID(00~17)

e : Sub\_id(A\_SIDE,B\_SIDE)

f : Class(HARDRST,ISOLAT,UNISOL)

Input : RMT-BSC-DEV:BSC=0,PROC=SMP00,DEV=SLPA,ID=0,CLS=HARDRST;

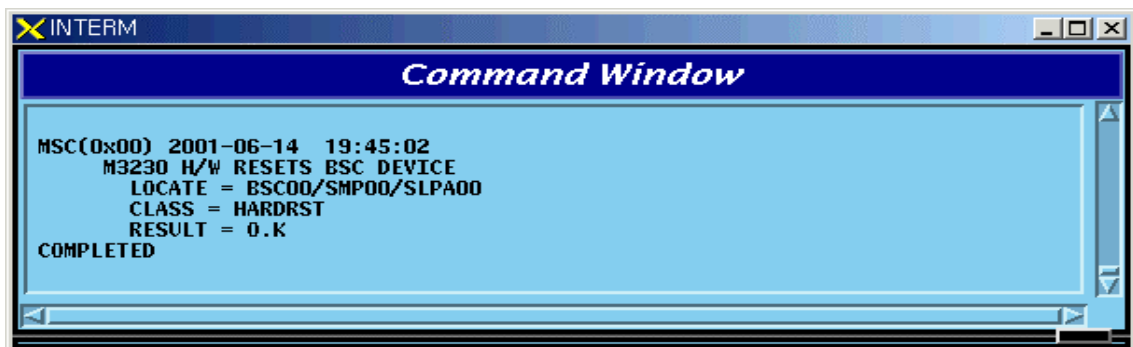


Fig. 4.4-30 Result of BSC Device H/W Reset Command

#### 4.4.4.14. H/W RESET ALPA Command

Function to reset ALPA on H/W Level.

Command : RMT-ALPA:BSC=0,ALMA=0,ALPA=0,CLS=HARDRST;

a : BSC Number(00~11)

b : ALMA ID(0~1)

c : ALPA ID(0~4)

d : Class(HARDRST,ISOLAT,UNISOL)

Input : RMT-ALPA:BSC=0,ALMA=0,ALPA=0,CLS=HARDRST;

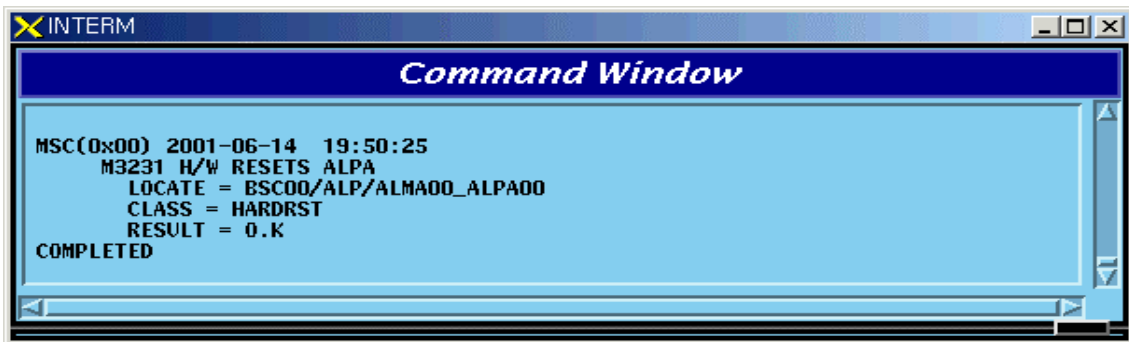


Fig. 4.4-31 Result of H/W RESET ALPA Command

### 4.4.5. Bts Device Status Control

#### 4.4.5.1. BTS Device Status Display Command

Function to display the BTS Device status

Command : DIS-BTS-DEV:BSC=a,BTS=b,PROC=c;

a : BSC Number(00~11)

b : BTS Number(00~47)

c : Processor Name(BSP,BPP,CRP,RCP(00~06)

Input : DIS-BTS-DEV:BSC=0,BTS=0,PROC=CRP;

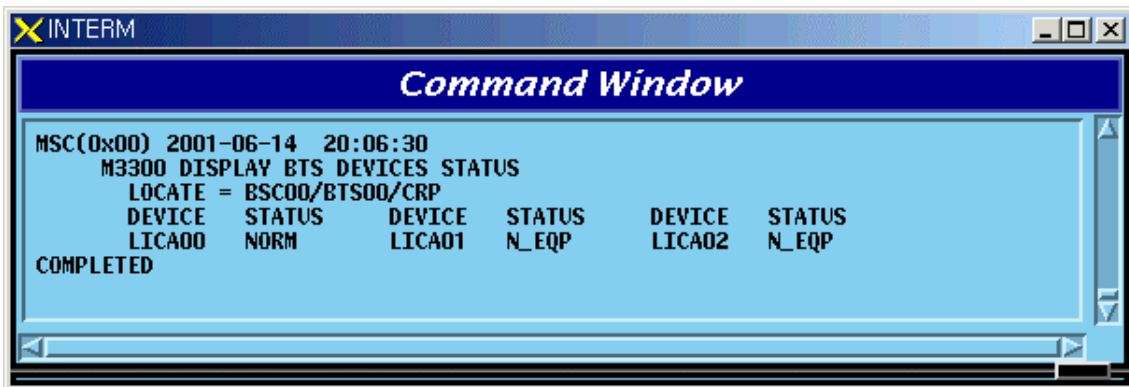


Fig. 4.4-32 Result of BTS Device Status Display Command

#### 4.4.5.2. FA Status Display Command

Function to display FA Status.

Command : DIS-FA-STTS:BSC=a,BTS=bFA=c;

a : BSC Number(00~11)

b : BTS Number(00~47)

c : FA Number(0~7)

Input : DIS-FA-STTS:BSC=0,BTS=0,FA=0;

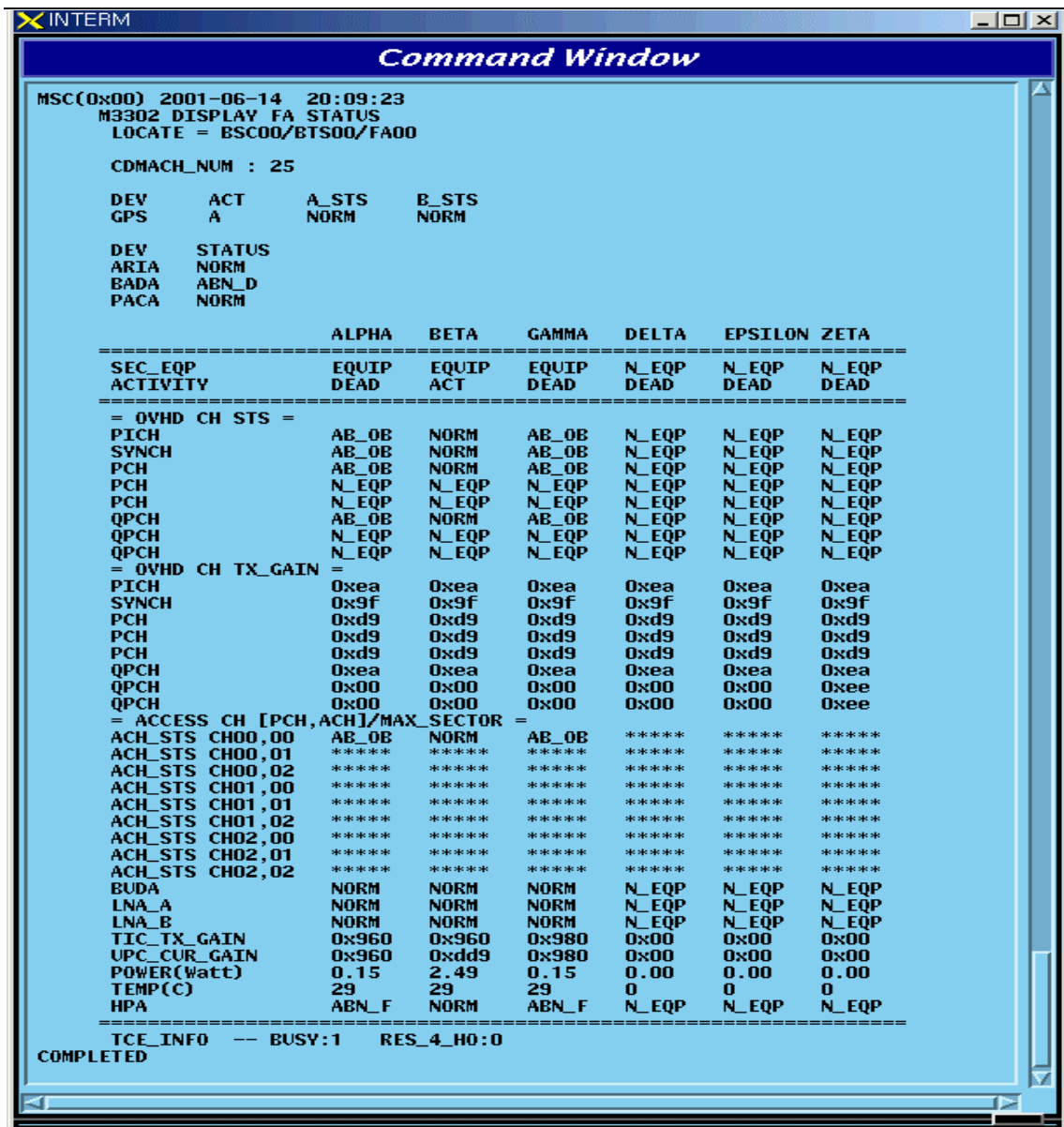


Fig. 4.4-33 Result of FA Status Display Command

#### 4.4.5.3. BLOCK DBPA Command

Function to block DBPA.

Command : BLK-DBPA:BSC=a,BTS=b,RCP=c,DBPA=d,[CHIP=e],[CONDITION=f];

a : BSC Number(00~11)

b : BTS Number(00~47)

c : RCP Number(0~5)

d : DBPA Number(0~9)

e : CHIP Number(0~1)

f : Select Option(conditional, unconditional)

Conditional : If there is call connected, wait until it is disconnected during timeout and then block it. If it is not disconnected until timeout, do not block it.

Unconditional : block a call regardless of their presence unconditionally. (The existing call is disconnected)

**Reference** : If an OverHead Channel is allocated, do not block a call unconditionally.

Input : BLK-DBPA:BSC=0,BTS=0,RCP=0,DBPA=1,CHIP=1,CONDITION=CONDITION;

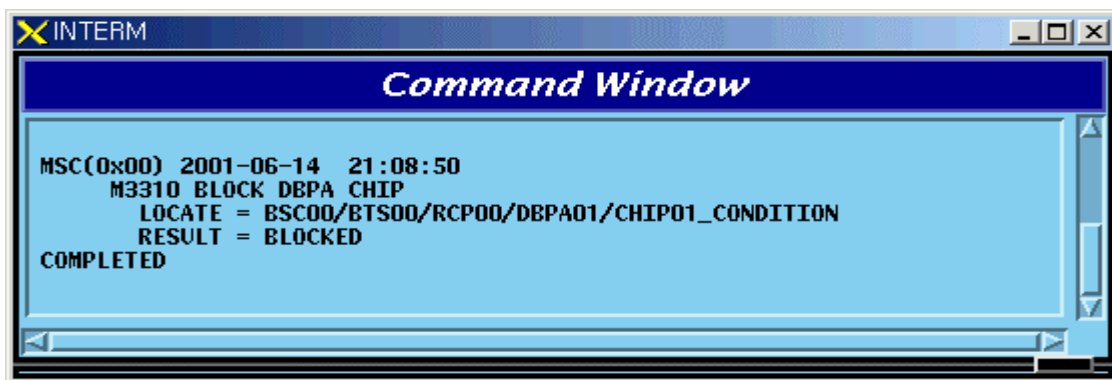


Fig. 4.4-34 Result of BLOCK DBPA Command

#### **4.4.5.4. UNBLOCK DBPA Command**

Function to unblock DBPA

Command : UBLK-DBPA:BSC=a,BTS=b,RCP=c,DBPA=d,[CHIP=e],[CONDITION=f];

a : BSC Number(00~11)

b : BTS Number(00~47)

c : RCP Number(0~5)

d : DBPA Number(0~9)

e : CHIP Number(0~1)

Input : UBLK-DBPA:BSC=0,BTS=0,RCP=0,DBPA=1,CHIP=1;



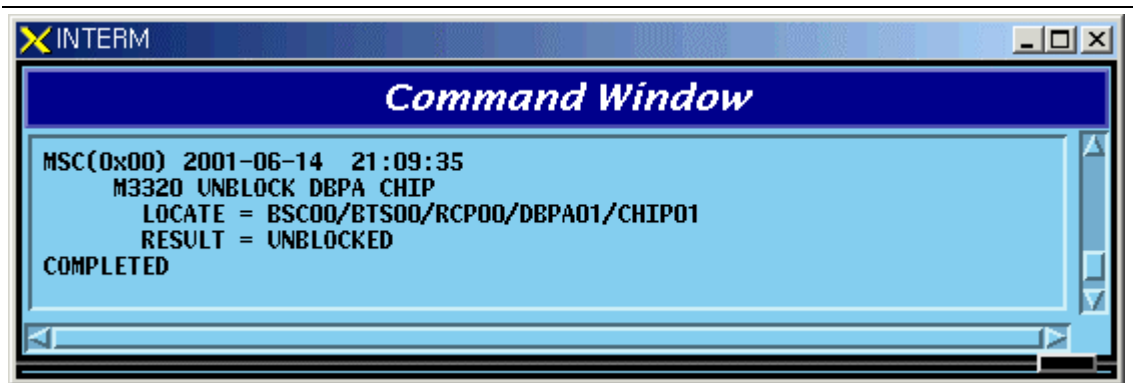


Fig. 4.4-35 Result of UNBLOCK DBPA Command

#### 4.4.5.5. BLOCK OverHead Channel Element Display Command

Function to block OverHead Channel Element

Command : BLK-OVHD-CE:BSC=a,BTS=b,SECTOR=c,FA=d;

a : BSC Number(00~11)

b : BTS Number(00~47)

c : SECTOR(ALPHA,BETA,GAMMA,DELTA,EPSILON,ZETA)

d : FA Number(0~5)

Input : BLK-OVHD-CE:BSC=0,BTS=0,SECTOR=ALPHA,FA=0;

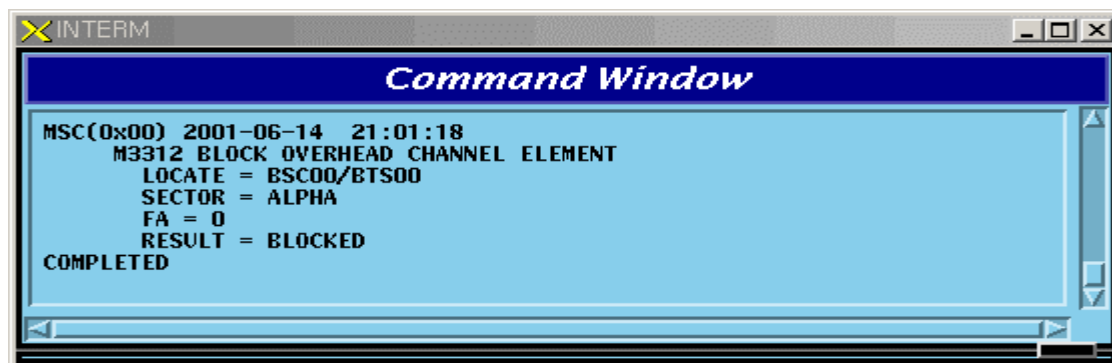


Fig. 4.4-36 Result of BLOCK OverHead Channel Element Display

#### 4.4.5.6. UNBLOCK OverHead Channel Element

Function to unblock OverHead Channel Element

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Command : UBLK-OVHD-CE:BSC=a,BTS=b,SECTOR=c,FA=d;

a : BSC Number(00~11)

b : BTS Number(00~47)

c : SECTOR(ALPHA,BETA,GAMMA,DELTA,EPSILON,ZETA)

d : FA Number(0~5)

Input : UBLK-OVHD-CE:BSC=0,BTS=0,SECTOR=ALPHA,FA=0;

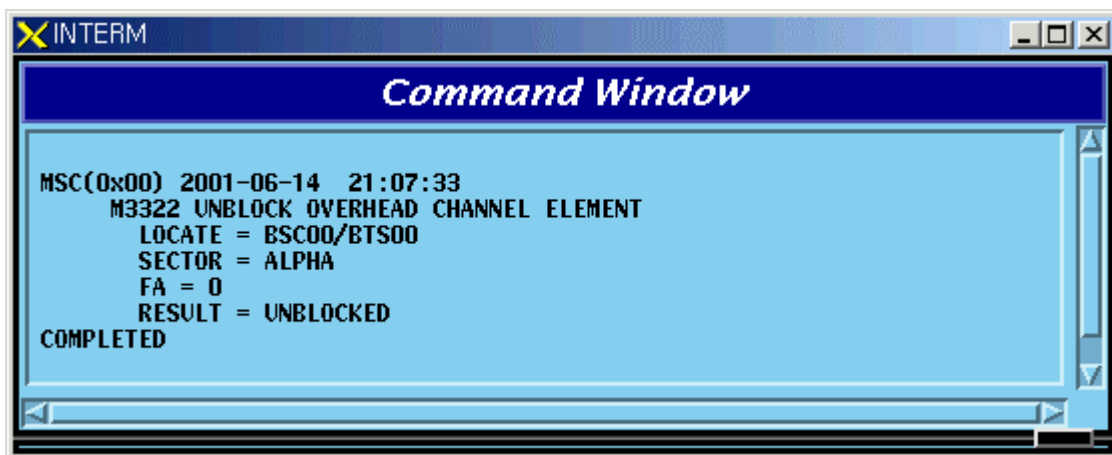


Fig. 4.4-37 Result of UNBLOCK OverHead Channel Element

#### **4.4.5.7. H/W RESET BTS Device Command**

Function to reset BTS Device on H/W.Level

Command : RMT-BTS-DEV:BSC=a,BTS=b,PROC=c,DEV=d,[ID=e],CLS=f;

a : BSC Number(00~11)

b : BTS Number(00~47)

c : Processor Name(BSP,BPP,CRP,RCP(00~05)

d : Device Name(ARIA,DBPA,BUDA,HPA,PACA,BADA,RISA,BOTA,LICA)

e : Device ID(0~9)

f : Class(HARDRST,ISOLAT,UNISOL)

Input : RMT-BTS-DEV:BSC=0,BTS=0,PROC=CRP,DEV=LICA,ID=0,CLS=HARDRST;

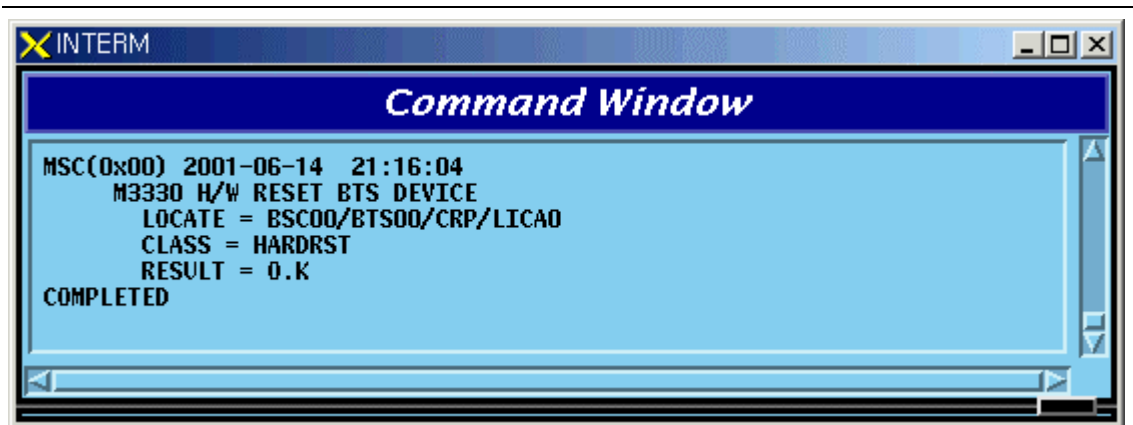


Fig. 4.4-38 Result of H/W RESET BTS Device Command

#### 4.4.5.8. H/W RESET LPA Device Command

Function to reset LPA Device on H/W.Level

Command : RMT-LPA:BSC=a,BTS=b,SECTOR=c,LPA=d,CLS=e;

a : BSC Number(00~11)

b : BTS Number(00~47)

c : SECTOR(ALPHA,BETA,GAMMA,DELTA,EPSILON,ZETA)

d : LPA Number(0~5)

e : Class(HARDRST,ISOLAT,UNISOL)

Input : RMT-LPA:BSC=0,BTS=0,SECTOR=ALPHA,LPA=0,CLS=HARDRST;

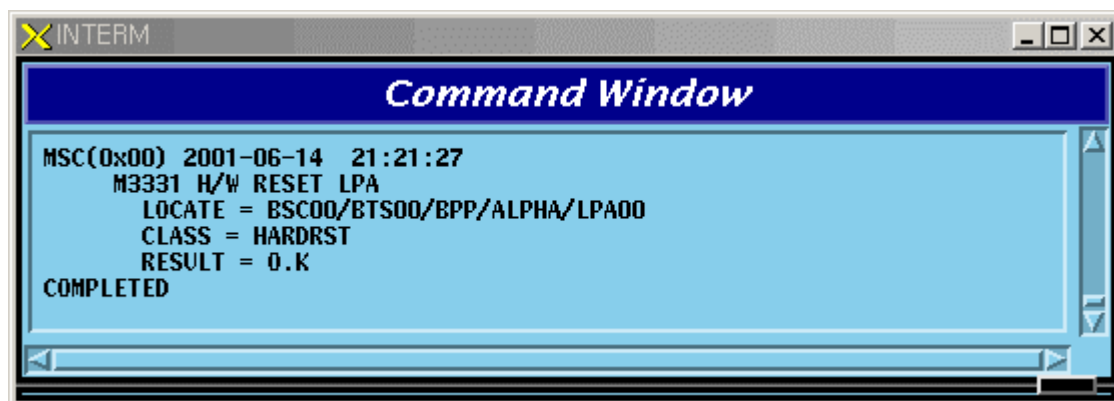


Fig. 4.4-39 Result of H/W RESET LPA Device Command

#### 4.4.5.9. H/W RESET LPA Combiner Command

Function to reset the LPA Combiner on H/W Level

Command : RMT-LPA-COM:BSC=a,BTS=b,SHELF=c,COM=d,CLS=e;

a : BSC Number(00~11)

b : BTS Number(00~47)

c : SHELF Number(0~5)

d : Combiner Number(0~2)

e : Class(HARDRST,ISOLAT,UNISOL)

Input : RMT-LPA-COM:BSC=0,BTS=0,SHELF=0,COM=0,CLS=HARDRST;

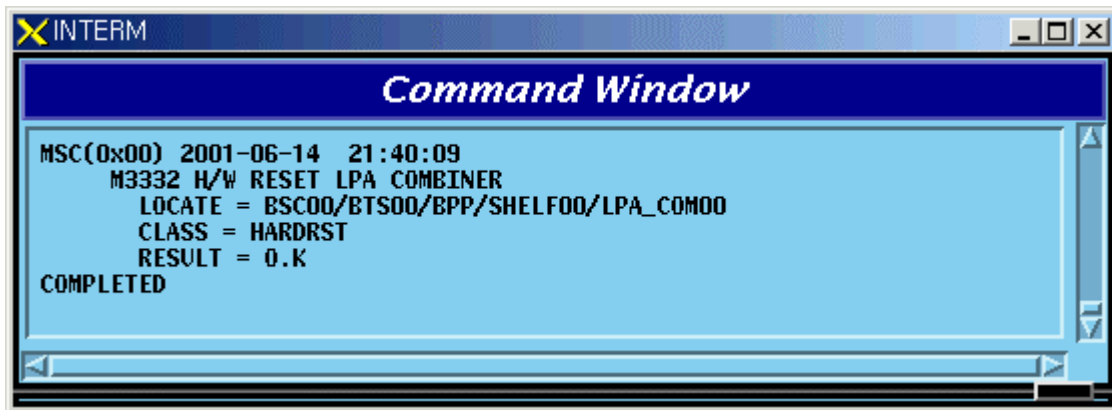


Fig. 4.4-40 Result of LPA Combiner H/W RESET Command

#### 4.4.5.10. BTS SHELF POWER H/W RESET Command

Function to reset BTS SHELF POWER on H/W Level

Command : RMT-BTS-SHF:BSC=a,BTS=b,SHF=c,CLS=d;

a : BSC Number(00~11)

b : BTS Number(00~47)

c : SHELF Name(BANU,RCBU(00~05)

d : Class(HARDRST,ISOLAT,UNISOL)

Input : RMT-BTS-SHF:BSC=0,BTS=0,SHF=RCBU00,CLS=HARDRST;



Fig. 4.4-41 Result of BTS SHELF POWER H/W RESET Command

### 4.4.6. Status Message Control

Table 4.4-5 Status Message LIST

Codes	Definition	Description
S3002	CAN CNP/PNP Status Change Display	When Processor Status changes, it occurs.
S3003	AMP Status Change Display	When Processor Status changes, it occurs.
S3004	ALP Status Change Display	When Processor Status changes, it occurs.
S3005	CCP Status Change Display	When Processor Status changes, it occurs.
S3006	SMP Status Change Display	When Processor Status changes, it occurs.
S3007	VMP Status Change Display	When Processor Status changes, it occurs.
S3008	PCP Status Change Display	When Processor Status changes, it occurs.
S3009	BSC-NCP Status Change Display	When Processor Status changes, it occurs.
S3010	BSP Status Change Display	When Processor Status changes, it occurs.
S3011	SCP Status Change Display	When Processor Status changes, it occurs.
S3012	BPP Status Change Display	When Processor Status changes, it occurs.
S3013	RCP Status Change Display	When Processor Status changes, it occurs.
S3017	CRP Status Change Display	When Processor Status changes, it occurs.
S3020	PMP Status Change Display	When Processor Status changes, it occurs.
S3201	CNP ASIA Status Change Display	Displayed upon device status change
S3202	CNP ASCA Status Change Display	Displayed upon device status change
S3205	PNP ASIA Status Change Display	Displayed upon device status change
S3206	PNP ASCA Status Change Display	Displayed upon device status change

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S3209	PCP BCRA Status Change Display	Displayed upon device status change
S3210	PMP BCRA Status Change Display	Displayed upon device status change
S3211	AMP GPSR Status Change Display	Displayed upon device status change
S3220	NCP ASIA Status Change Display	Displayed upon device status change
S3221	NCP ASCA Status Change Display	Displayed upon device status change
S3222	NCP ATSA Status Change Display	Displayed upon device status change
S3224	ALP ALMA Status Change Display	Displayed upon device status change
S3230	BSP GPS Status Change Display	Displayed upon device status change
S3501	CCP Overload State Change Display	Displayed when overload status is generated, released and changed owing to load change in CCP
S3502	BSP Overload State Change Display	Displayed when overload status is generated, released and changed owing to load change in BSP

#### 4.4.6.1. Inhibited Status Message Display Command

Function to display Status Message whose display to Outterm is inhibited

Command : DIS-INH-STS;

Input : DIS-INH-STS;

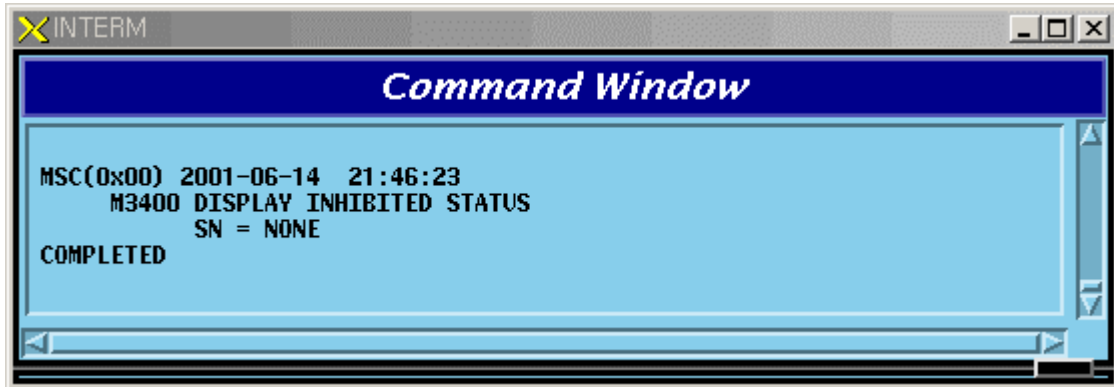


Fig. 4.4-42 Result Inhibited Status Message Display Command

#### 4.4.6.2. Status Message Display Inhibition Command

Function to inhibit Status Message display

Command : INH-STS-MSG:SN=a;

a: SN Number(ALL,S3002~S3020,S3201~S3230, S3501,S3502)

Input : INH-STS-MSG:SN=S3002;

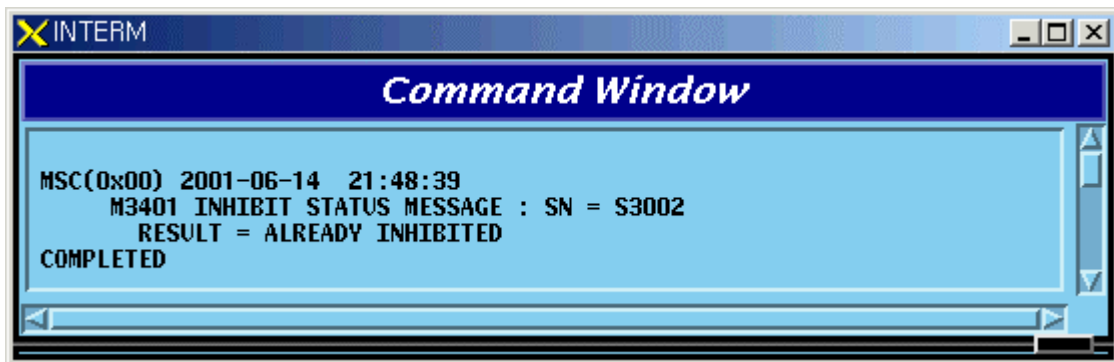


Fig. 4.4-43 Result of Status Message Display Inhibition Command

### 4.4.6.3. Allow Inhibited Message Command

Function to allow display of Status Message whose display to Outterm is inhibited

Command : ALW-STS-MSG:SN=a;

a: SN Number(ALL,S3002~S3020, S3201~S3230, S3501,S3502)

Input : ALW-STS-MSG:SN=S3002;

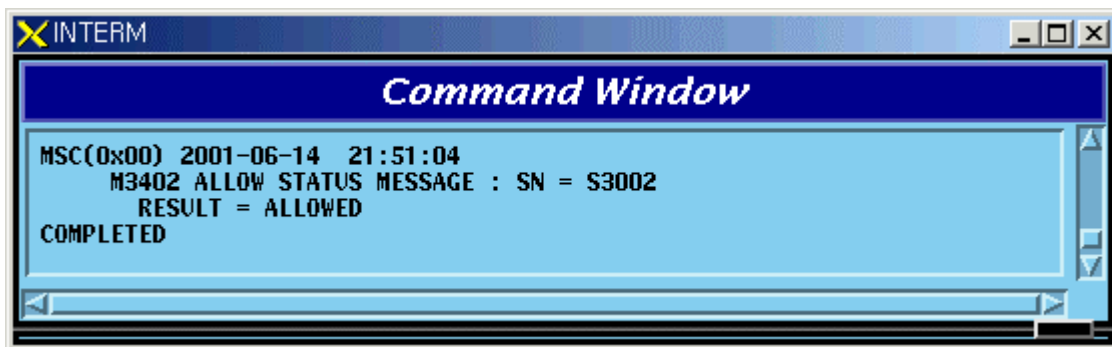


Fig. 4.4-44 Result of Inhibited Message Display Allow Command

## 4.4.7. Overload Status Control

### 4.4.7.1. Processor Overload Status Display Command

Function to display processor Overload Status

Command : DIS-OVLD-STS:[BSC=a],[BTS=b],PROC=c;

a : BSC Number(00~11)

b : BTS Number(00~47)

c : Processor Name(CCP,BSP)

Input : DIS-OVLD-STS:BSC=0,BTS=0,PROC=BSP;



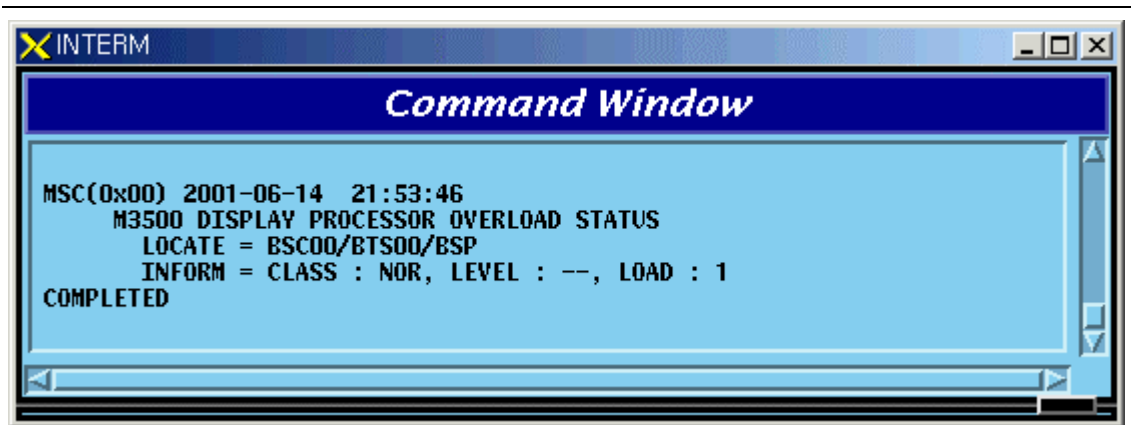


Fig. 4.4-45 Result of Processor Overload Status Display Command

#### 4.4.7.2. Overload Threshold Value Display Command

Function to display Overload Threshold Value

Command : DIS-OVLD-THR:BSC=a,[BTS=b],PROC=c;

a : BSC Number(00~11)

b : BTS Number(00~47)

c : Processor Name(CCP,BSP)

Input : DIS-OVLD-THR:BSC=0,BTS=0,PROC=BSP;

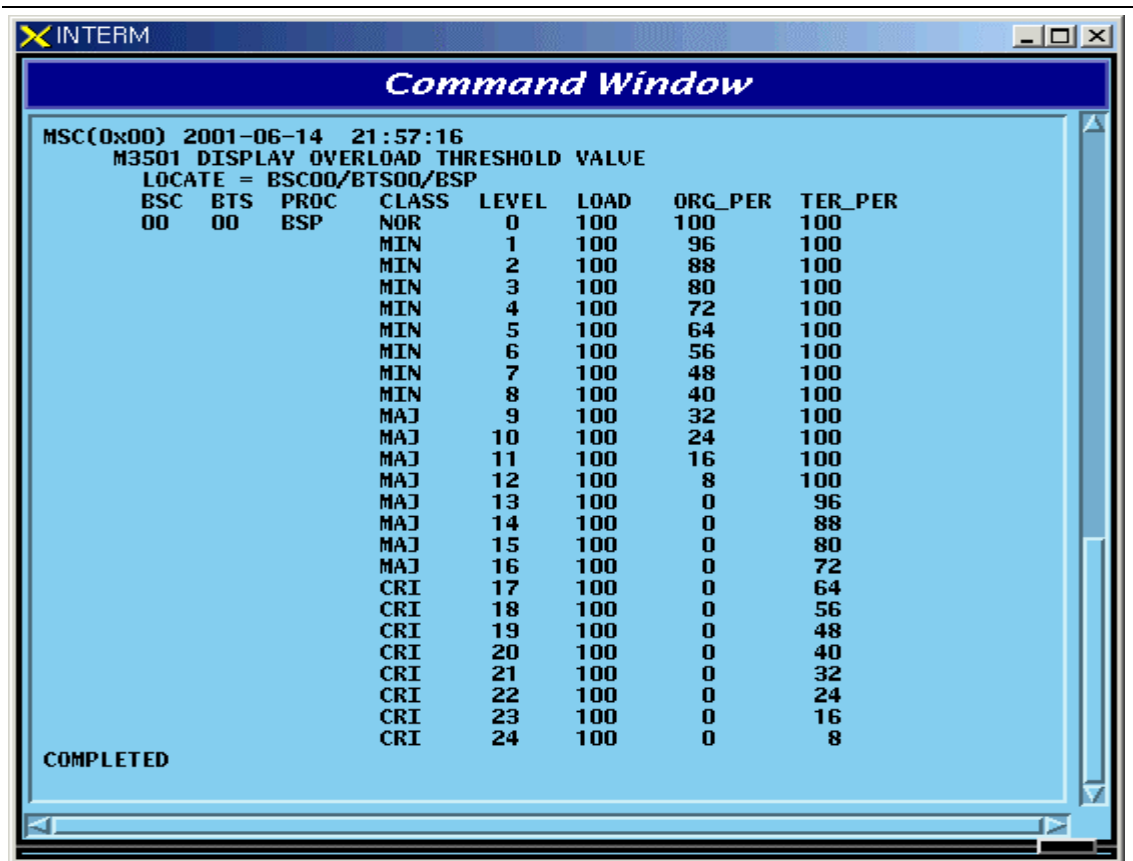


Fig. 4.4-46 Result of Overload Threshold Value Display Command

#### 4.4.7.3. Overload Threshold Value Change Command

Function to change Overload Threshold Value.

Command:

CHG-OVLD-THR:BSC:a,[BTS=b],LEVEL=c,[LOAD=d], [ORG\_PER=e],[TER\_PER=f];

a : BSC Number(00~11)

b : BTS Number(00~47)

c : LEVEL(0~100)

d : LOAD(0~100)

e : ORG\_PER(0~100)

f : TER\_PER(0~100)

Input :

CHG-OVLD-THR:BSC:0,BTS=0,LEVEL=0,LOAD=100, ORG\_PER=97,TER\_PER=100;

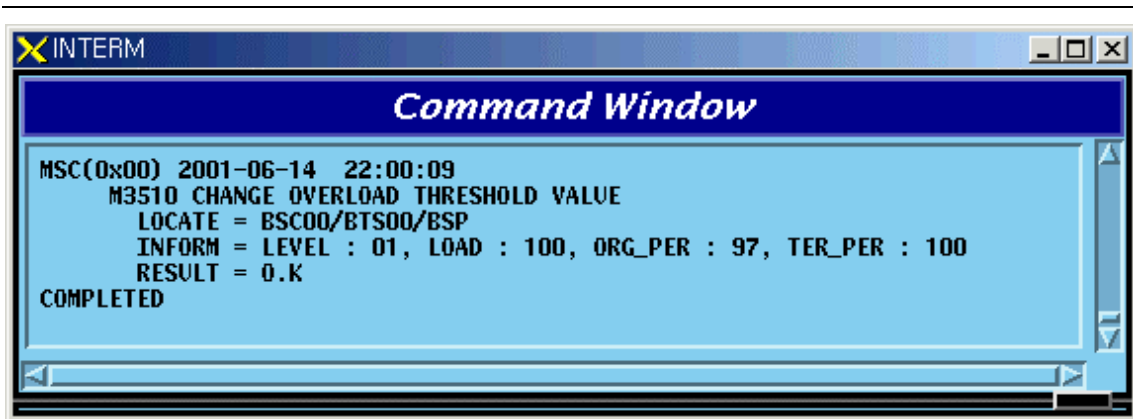


Fig. 4.4-47 Result of Overload Threshold Value Change Command

#### 4.4.7.4. Overload Generation Test Command

Function to generate Overload threshold value

Command : STRT-OVLD-GEN:BSC=a,[BTS=b],PROC=c,LEVEL=d;

a : BSC Number(00~11)

b : BTS Number(00~47)

c: Processor Name(CCP,BSP)

d: LEVEL(0~24)

Input : STRT-OVLD-GEN:BSC=0,BTS=0,PROC=BSP,LEVEL=0;

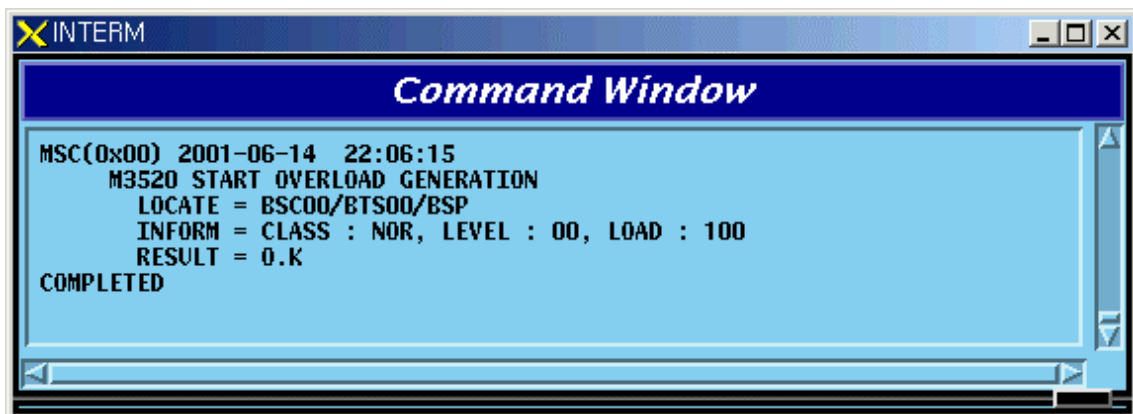


Fig. 4.4-48 Result of Overload Generation Test Command

#### 4.4.7.5. Overload Generation Test STOP Command

Function to stop the Overload Generation Test

Command : STOP-OVLD-GEN:BSC=a,[BTS=b],PROC=c,LEVEL=d;

a : BSC Number(00~11)

b : BTS Number(00~47)

c: Processor Name(CCP,BSP)

d: LEVEL(0~24)

Input : STOP-OVLD-GEN:BSC=0,BTS=0,PROC=BSP,LEVEL=0;

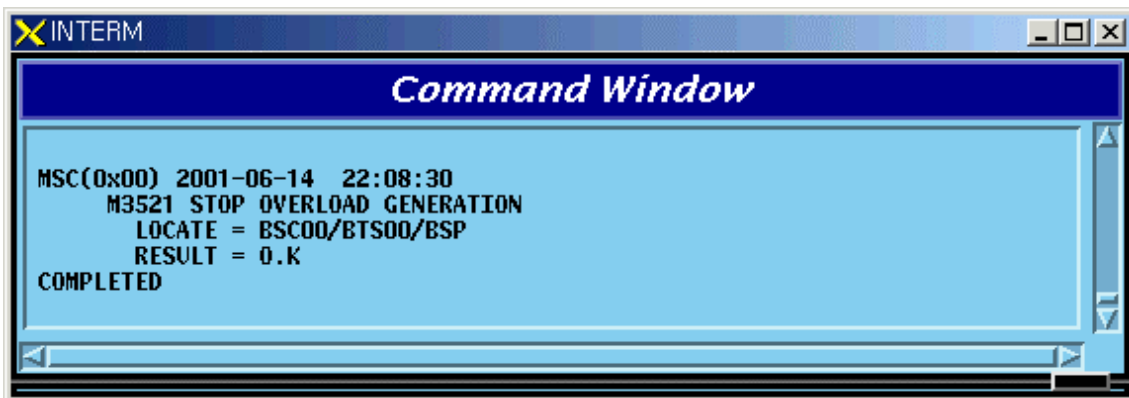


Fig. 4.4-49 Result of Overload Generation Test STOP Command

#### **4.4.7.6. Command to Display Whether or not the Overload Generation Test is performed**

Function to find out whether the Overload Display Test is performed

Command : DIS-OVLD-GEN:BSC=a,[BTS=b],PROC=c,LEVEL=d;

a : BSC Number(00~11)

b : BTS Number(00~47)

c: Processor Name(CCP,BSP)

d: LEVEL(0~24)

Input : DIS-OVLD-GEN:BSC=0,BTS=0,PROC=BSP,LEVEL=0;

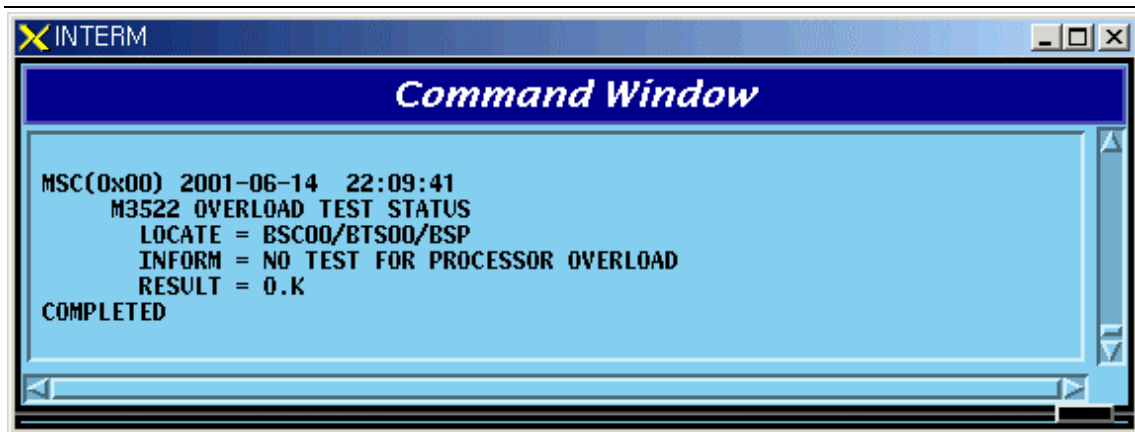


Fig. 4.4-50 Command to Determine Whether to Perform the Overload Generation Test

## **4.5. Test Command**

### **4.5.1. On-Line Test-related Command**

On-Line Test is a function that allows a test to be performed automatically at a specific time on a specific day and includes the following: Vocoder, CE, BTS Markov test and VSWR test. The tests of CE, BTS Markov and VSWR find out presence of faults in hardware of Channel Elements in BTS and the test function for radio environment, and the Vocoder test finds out presence of faults in hardware of Vocoder in BSC. Because the tests of CE, Vocoder, BTS Markov, and VSWR seize call resources, the user designates the specific time (idlest time) during the time that only a test is allowed. The tests of CE, BTS Markov, and VSWR are conducted under the supervision of BSP while the Vocoder test is conducted under the supervision of CCP. If the user designates the day and start/ending time for the Online test, and the ID scope of the board to be tested, BSM becomes the designated time of the designated day and if the test is in the ALLOW status, it commands the corresponding Processor to start/end the test.

The performance of the On-Line test is decided by Command INH-ONL-TEST (Inhibit Test), ALW-ONL-TEST(Allow Test). Only when the status is designated as “ALLOW” by ALW-ONL-TEST Command, On-Line test is performed. The Command of INH-ONL-TEST inhibits the test. Besides these two Commands, there is a command to stop the test by each Test(CE : STS-CE-ONL, Vocoder : STS-VCE-ONL, BTS Markov : STS-MKV-ONL, VSWR : STS-VSWR-ONL). If the test was stopped by INHIBIT Command, the On-Line Test is not performed even if the designated time of the designated day of the week arrives because inhibit/allow status is changed to “INHIBIT”. . However, if the Test was stopped by the above listed STOP Command, the On-Line Test that was performed on that day only comes to a halt and at the designated time of the next designated day of the week the On-Line Test is to be performed normally because DB Flag that indicates the status of INHIBIT/ALLOW is not changed

#### **4.5.1.1. On-Line Test Inhibit Command**

It is the function that inhibits On Line Test for CE, Vocoder, BTS Markov, and VSWR test. In the cases of CE, BTS Markov, and VSWR test, input the corresponding BTS number and in the case of Vocoder test, input the corresponding BSC number.

- Command INH-ONL-TEST:EXE=a, BSC=b,[BTS=c];  
a: VCE/CE/MKV/VSWR

b: BSC number (0~11)

c: BTS number (0~47)

- Input/Output

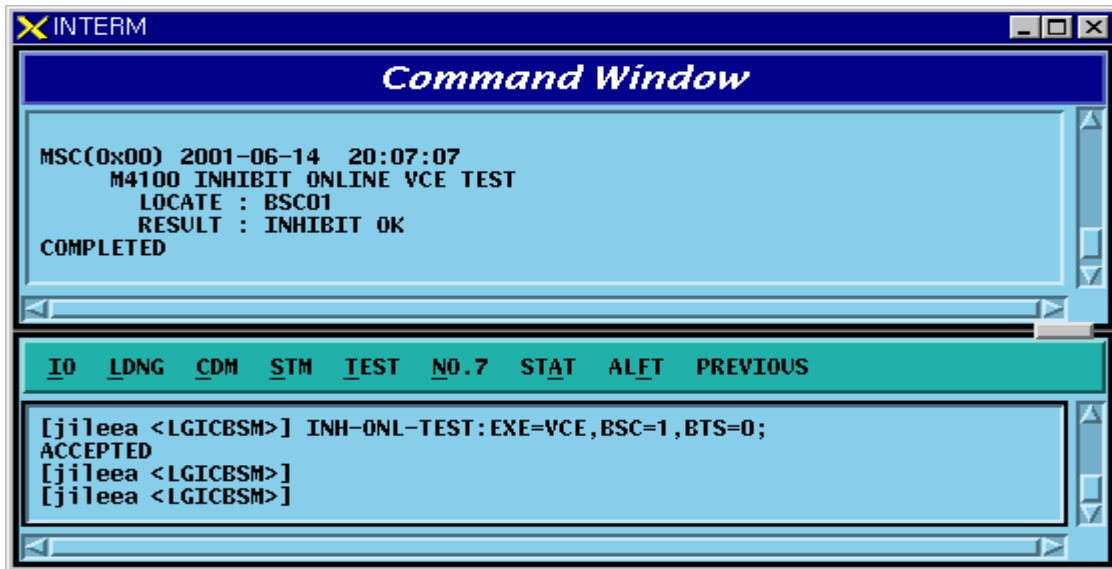


Fig. 4.5-1 Result of Test Inhibit Command Execution

#### 4.5.1.2. On-Line Test Allow Command

Function that allows Online Test for CE, Vocoder, BTS Markov, and VSWR test

For CE, BTS Markov and VSWR test, input the corresponding BTS number and for Vocoder test, input corresponding BSC number.

- Command ALW-ONL-TEST:EXE=a,BSC=b[BTS=c];

a: VCE/CE/MKV/VSWR

b: BSC number (0~11)

c: BTS number (0~47)

- Input/Output

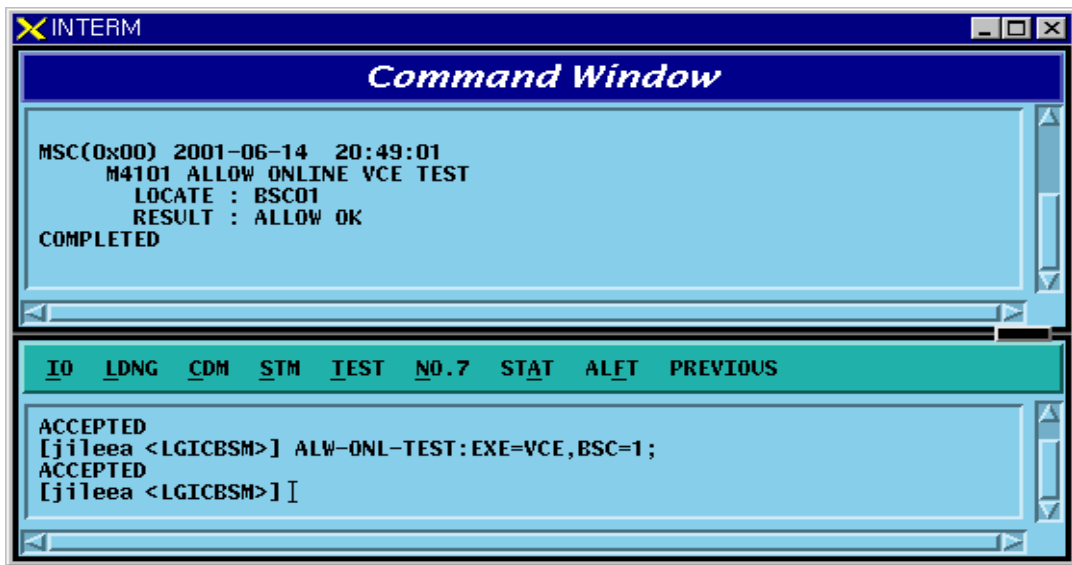


Fig. 4.5-2 Result of Test Allow Command Execution

#### 4.5.1.3. On-Line Test Inhibit Item Display Function

Function to display the inhibit of the on line test for the specific tests among the on-line tests by BSC and BTS. For Vocoder test, it displays Inhibit status. In case of CE, BTS Markov and in case of the VSWR test, it displays the status by BTS.

- Command DIS-INH-ONL:EXE=a,BSC=b[BTS=c];
  - a: VCE/CE/MKV/VSWR
  - b: BSC number (0~11)
  - c: BTS number (0~47)
- Input/Output



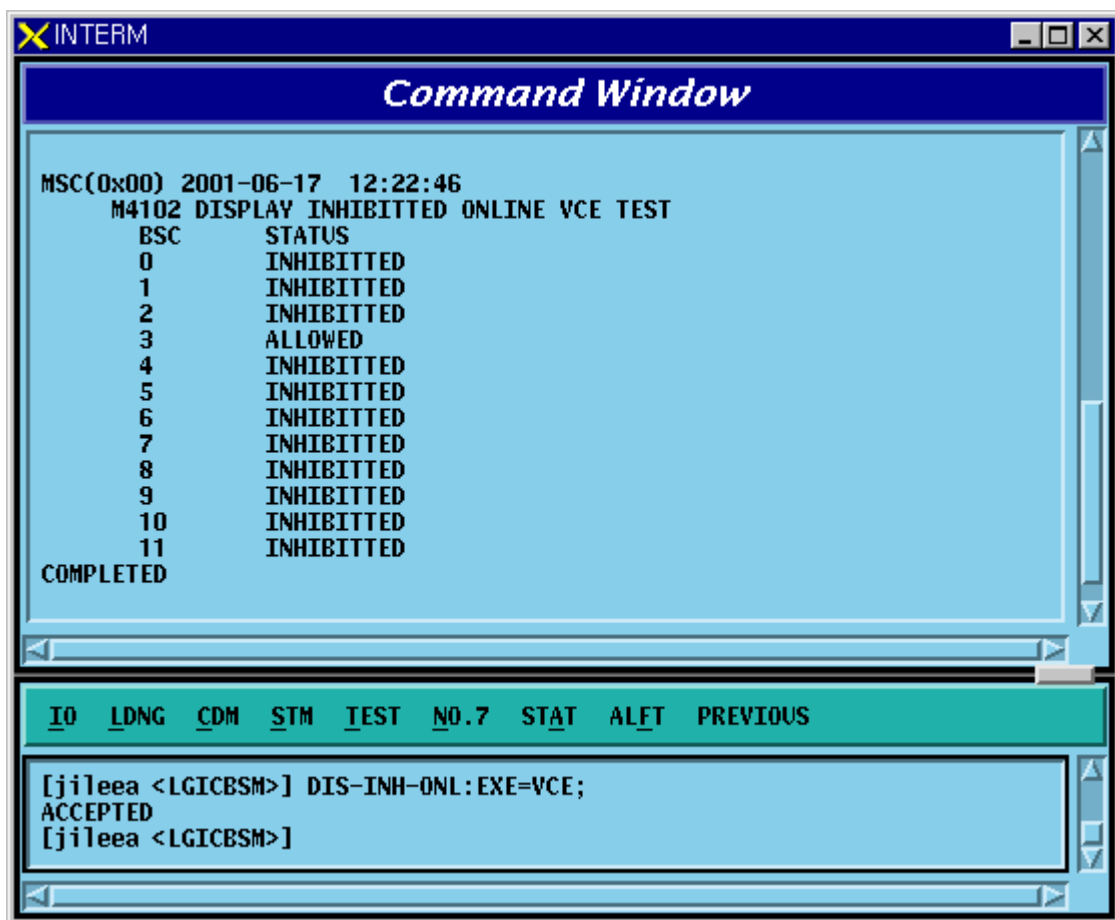


Fig. 4.5-3 Result of Test Inhibit/Allow List Display Command Execution

## 4.5.2. Test-related to Channel Element

Channel Element Test is performed in BIT(Built In Test) for each chip. The types of BIT Test are as follows:

- Bus Interrupt Test
- ChipX16 Test
- PP2S Test
- PCG Test

This BIT Test is normally performed on Chip with OVHD channel and Chip seized with a call and the result is reported to BSM.

**Table 4.5-1CE Test Result Message**

On-Demand	DESCRIPTION
BIT_OK	NORMAL
BIT_BUS_FAIL	BUS INTERFACE TEST FAIL
BIT_INT_FAIL	INTERNAL INTERRUPT TEST FAIL
BIT_CHIPX16_FAIL BIT_PP2S_FAIL	CHIPX16 TEST FAIL
BIT_PCG_FAIL	PCG TEST FAIL
BIT_RAM_FAIL	MEMORY TEST FAIL
BIT_PROGRESS_FAIL	TEST PERFORMING FAIL

### 4.5.2.1. Channel Element Test Function

Function to perform BIT test by CHC and CHIP unit.

- Command TEST-CE :BSC=a ,BTS=b ,PROC=c [,CHC=d] [,CHIP=e];
  - a: BSC number (0~11)
  - b: BTS number (0~47)
  - c: RCP number (0~9)
  - d: Channel Card Number (0~9)
  - e: Chip Number (0~1)
- Input/Output

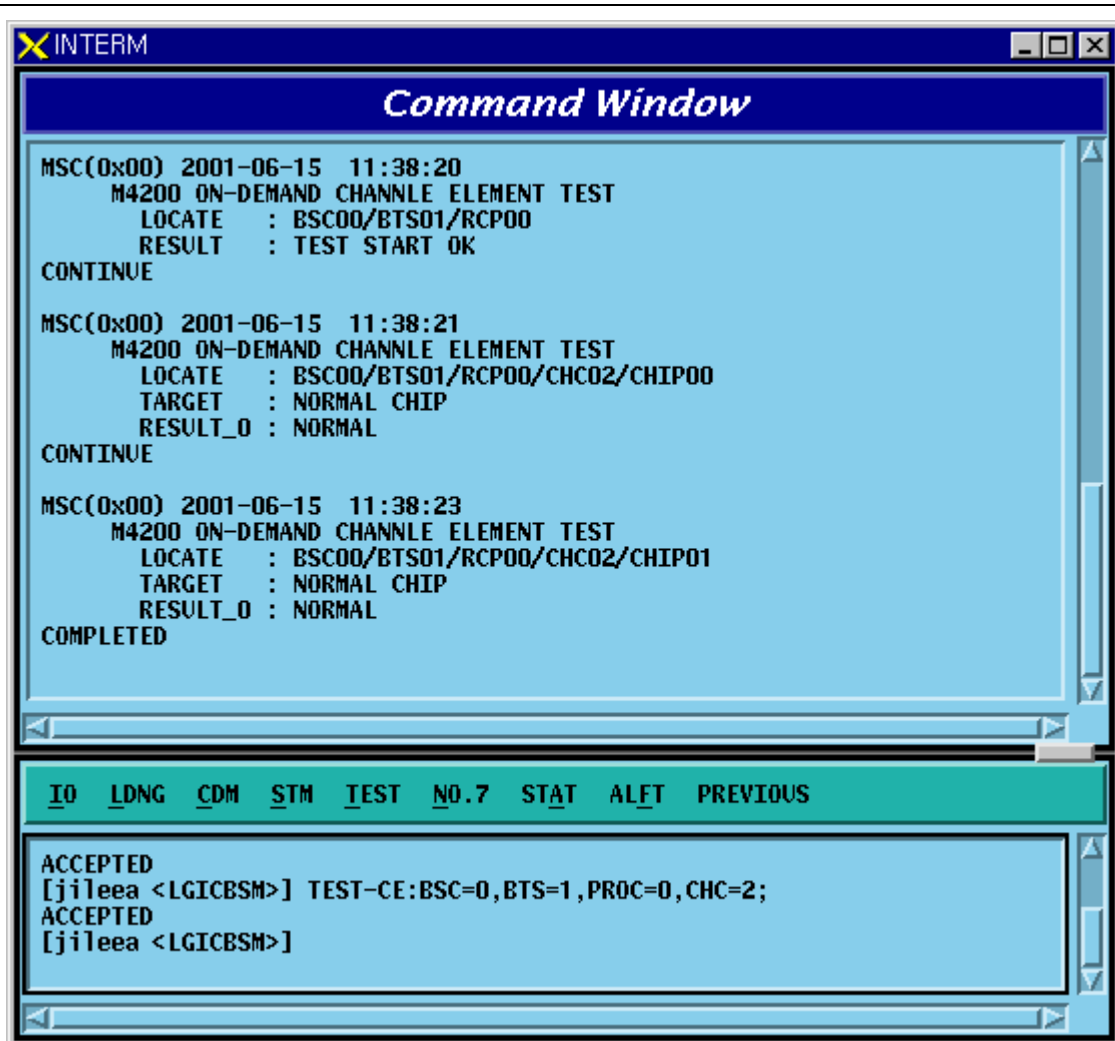


Fig. 4.5-4 Result of CE BIT Test Execution

---

### **4.5.3. Vocoder Test Function**

The types of Vocoder Tests are as follows:

- o DSP H/W Test
  - Determines the presence of problems in ROM, RAM, ALU of DSP in Vocoder
  - Diagnosis the presence of problems by checking Checksum, Read/Write, Flag Set, etc.
  - Caused by defective DSP Chip
- o Timing Module Test (Channel Test)
  - VCP generates Vocoder and Tx.Rx Timing by using MFP(Multiple-Function Processor) in order to exchange voice data with SLP every 20ms.
  - It judges the presence of problems in Vocoder counter by checking the generated Rx.Tx timing.
- o Loopback Test (Channel Test)
  - It is a test to decide whether or not the status of Loop used in Qcelp Algorithm test is normal and its Loop section has VLIA, VCMA and VCPA. All of them should be normal to execute the Qcelp Algorithm test. VCP generates Test Pattern and by checking the Loopbacked result, it decides an absence of failure.
- o QCELP Algorithm Test (Channel Test)
  - Due to intermittent problems in Vocoder and VCPA Card H/W, a phenomenon that a call is not heard bi-directionally occurs. In order to prevent this from happening, Qcelp Algorithm is tested. This test determines whether Vocoder is normal by testing whether status transition of Qcelp Algorithm is normally performed by the state. .

**Table 4.5-2 Vocoder Test Result**

On-Demand / On-Line Message	Description
-----------------------------	-------------

FLT_DSP_HW	DSP HW test Fault
FLT_CLK	Timing Module test Fault
FLT_VCPA_LOOPBACK	Vocoder Processor Loopback test Fault
FLT_VCMA_LOOPBACK	Vocoder Master board Loopback test Fault
FLT_VLIA_LOOPBACK	Vocoder Line interface Loopback test Fault
FLT_QCELP_ST0	Qcelp Algorithm test Fault state0
FLT_QCELP_ST1	Qcelp Algorithm test Fault state1
FLT_QCELP_ST2	Qcelp Algorithm test Fault state2
FLT_QCELP_ST3	Qcelp Algorithm test Fault state3

**4.5.3.1. On-Demand Vocoder Test Function**

Function to test Vocoder DSP or Channel by VCP/SLAVE/CHIP unit.

- Command TEST-VCE: BSC=a ,VMP=b ,S\_VCP=c [,E\_VCP=d] [,SLAVE=e] [,CHIP=f] [,VCE=g] ,TYPE=h [,OPTION=i] [,WAIT\_T=j]

a: BSC number (0~11)

b: VMP number (0~7)

c, d: VCP number (0~15)

e: SLAVE number (0~1)

f : CHIP number (0 ~ 3)

h: Test Type(DSP, Channel)

i: Test Option(SKIP, RELEASE, WAIT\_THEN) => These are options used to test channels when a call is seized, and SKIP does not perform a test when a call is seized but skips. With option RELEASE, it disconnects a call when a call is seized and then performs a test. With option WAIT\_THEN, it waits as long as j time is allowed and if a call is released within the designated time, then it goes on with a test. However, if a call is not released, it skips.

J: Wait Time(5~300 sec)

- Input/Output

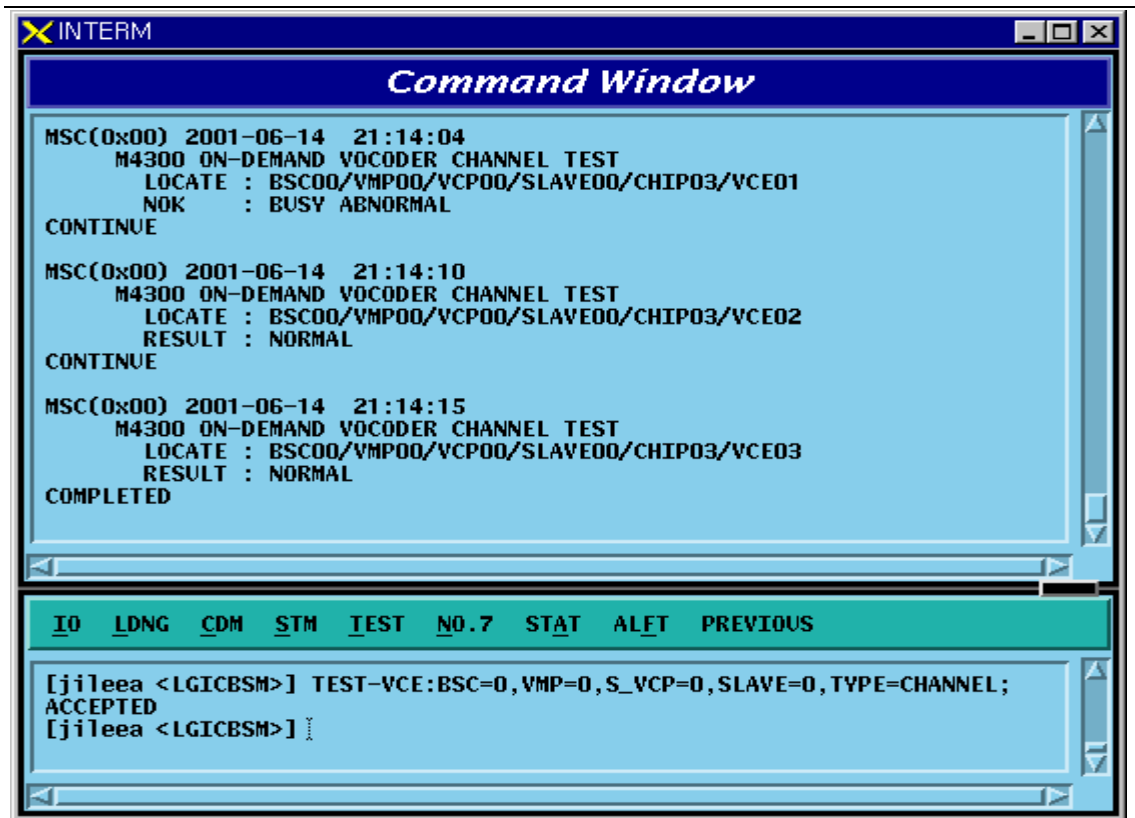


Fig. 4.5-5 Result of On-Demand Vocoder Test(Channel Type) Execution

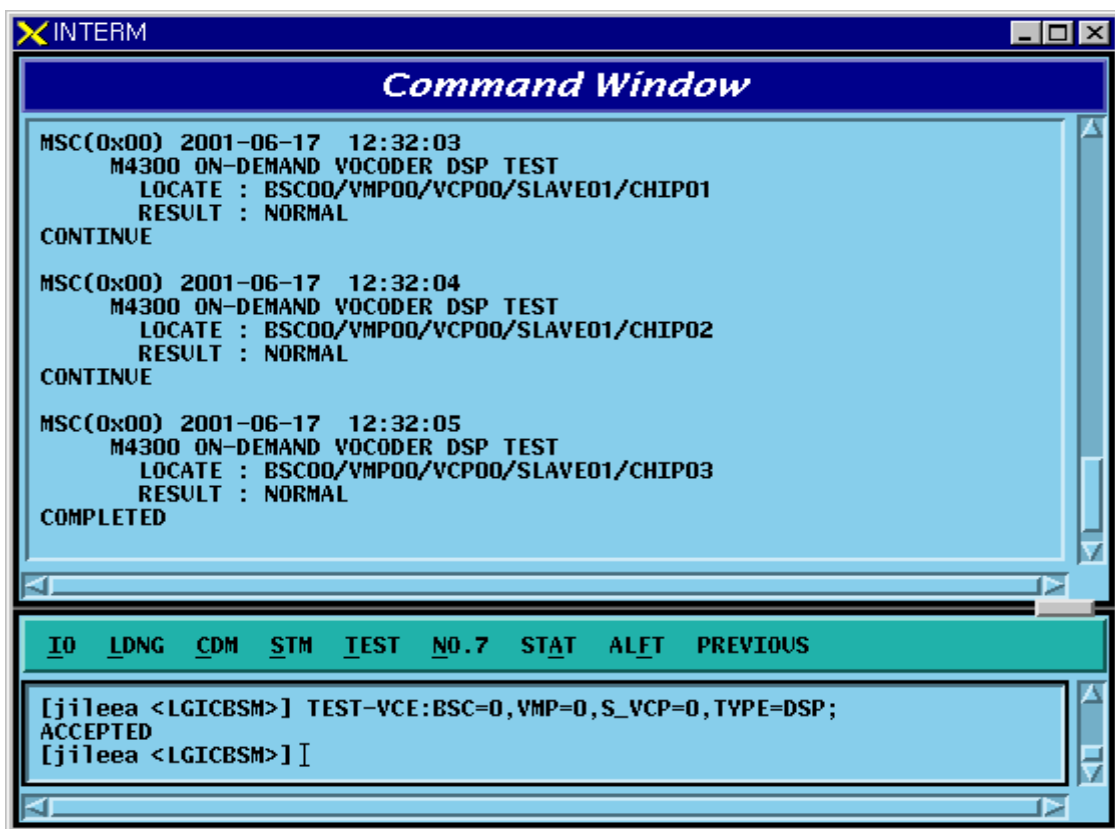


Fig. 4.5-6 Result of On-Demand Vocoder Test(DSP Type) Execution

#### 4.5.3.2. Parameter Change Command Related to On-Line Vocoder Test

Function to change On-Line Vocoder test start/ending time, test day and the scope of VMP/VCP to be tested.

- Command CHG-VCE-PARA :BSC=a ,S\_VMP=b [,E\_VMP=c] ,S\_VCP=d [,E\_VCP=e] [,STIME=f] [,ETIME=g] ,WDAY=h;

- a: BSC number (0~11)
- b,c: VMP number(0~7)
- d,e: VCP number(0~15)
- f: On-Line test Start Time (0~23 Hour)
- g: On-Line test End Time (1~24 Hour)
- h: Test Day(Month ~ Day, Daily)

- Input/Output

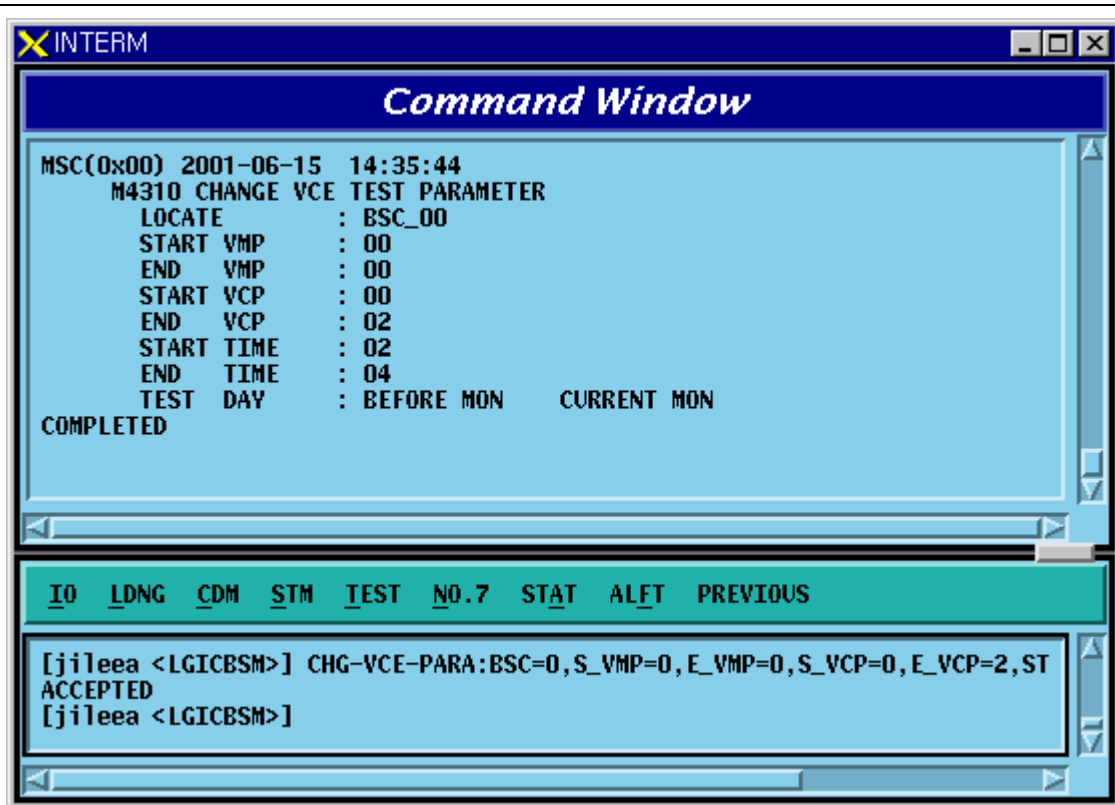


Fig. 4.5-7 Result of On-Line Vocoder Test parameter Change Command Execution

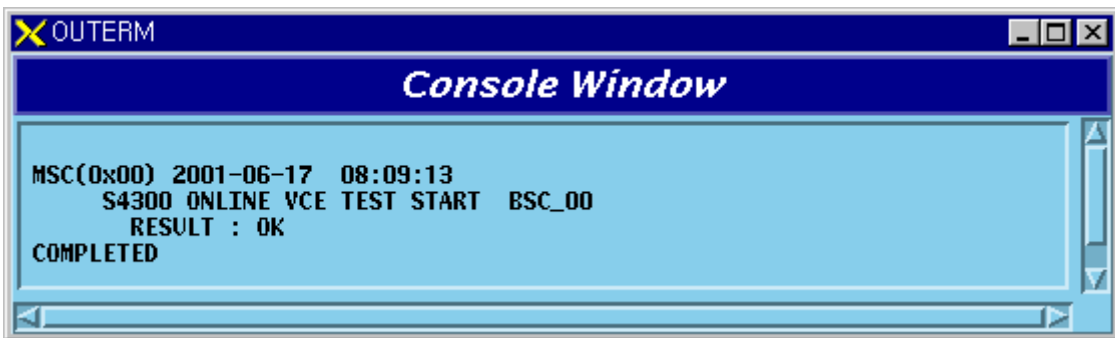


Fig. 4.5-8 Result of On-Line Test at the time of On-Line Vocoder Test Execution



Parameter Change

**4.5.3.3. Parameter Display Command related to On-Line Vocoder Test**

Function to display On-Line Vocoder test start/ending time, test day, and the scope of VMP/VCP to be tested.

- Command DIS-VCE-PARA:BSC=a;
  - a: BSC number (0~11)
- Input/Output

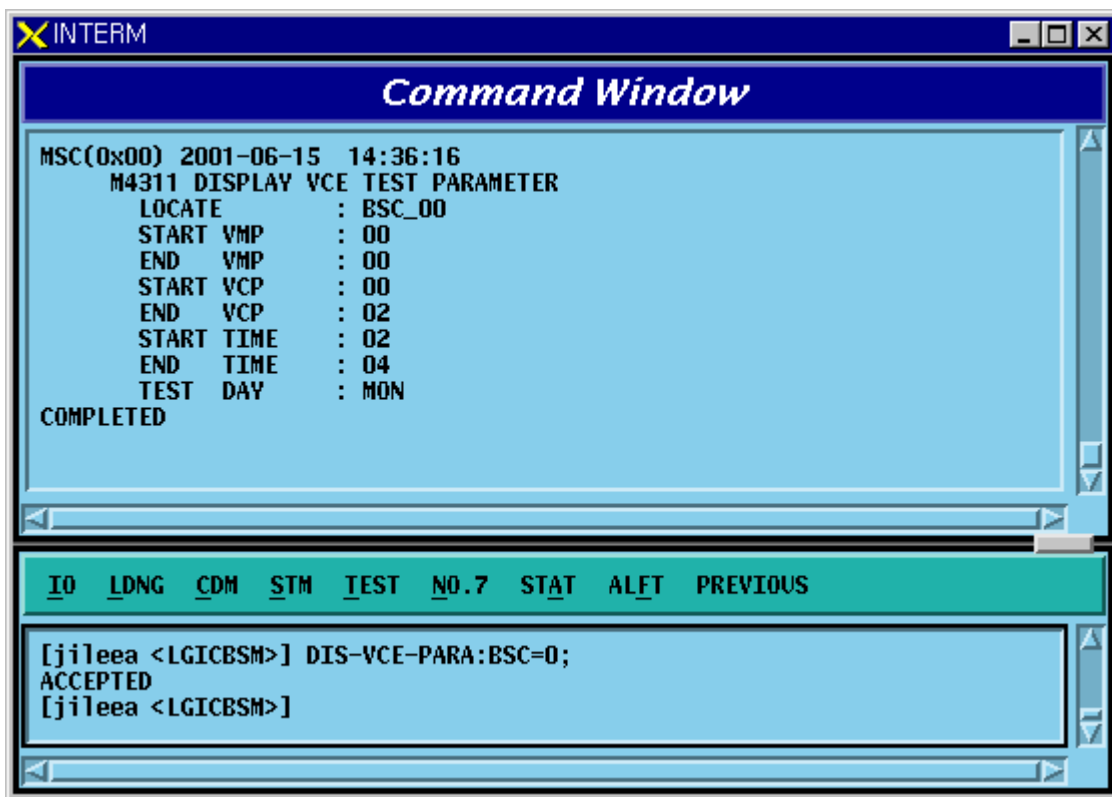


Fig. 4.5-9 Result of On-Line Vocoder Test Parameter Display Command Execution

**4.5.3.4. Display Command of On-Line Vocoder Test Result**

Function to display the On-Line Vocoder Test Results which are stored in CCP to BSM by the VMP unit

- Command DIS-VCE-RSLT:BSC=a,VMP=b;
  - a: BSC number (0~11)
  - b: VMP number (0~7)

- Input/Output

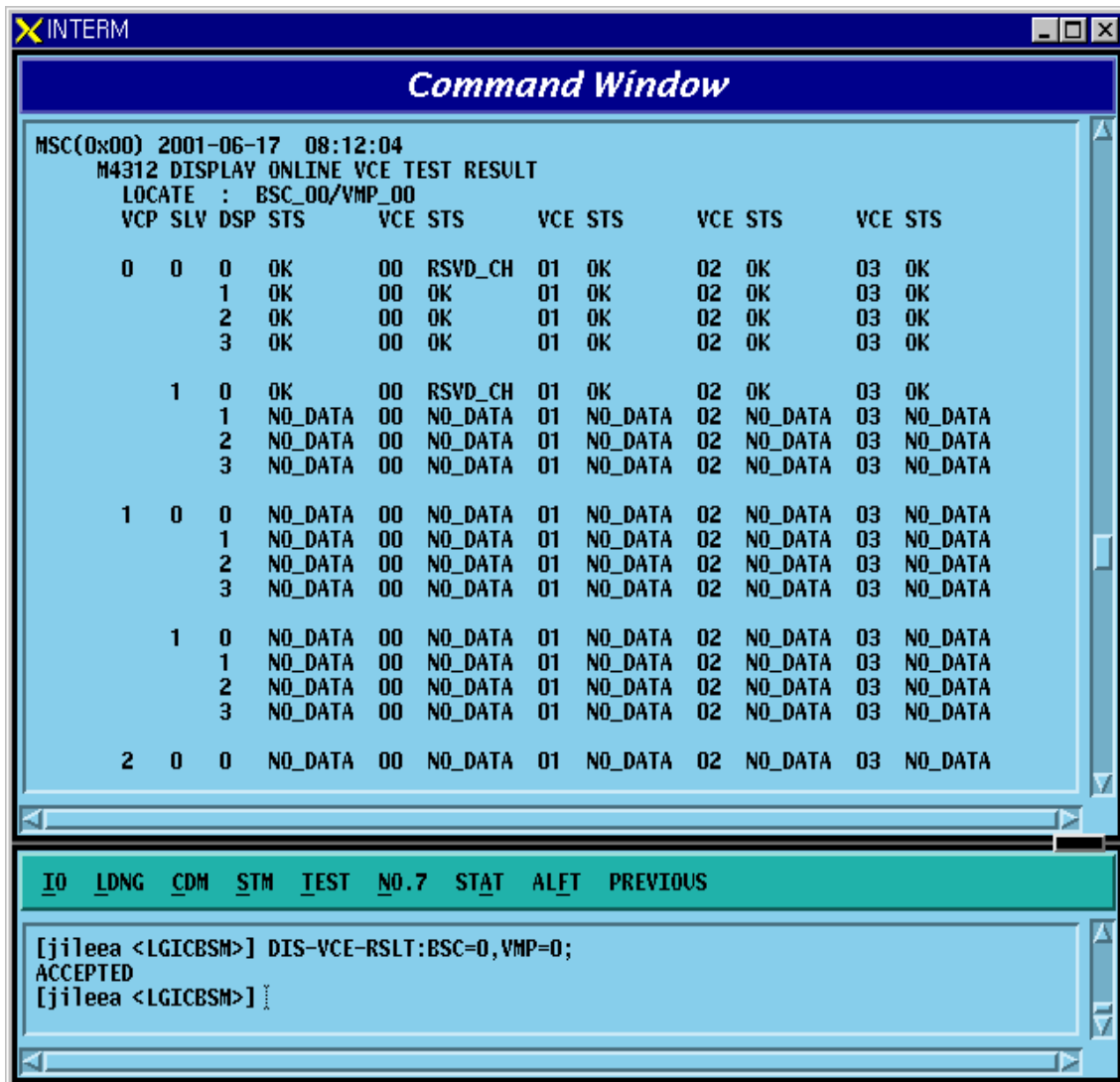


Fig. 4.5-10 On-Line Vocoder Test Result Display Command

#### 4.5.3.5. Display Command of On-Line Vocoder Test Status

Function to display the On-Line Vocoder Test performance status and to stop the test. If Item Field is designated as "DISPLAY", it displays On-Line Vocoder test status of the present corresponding BSC, and if it is designated as "END\_ONL", it stops current On-Line test.

- Command STS-VCE-ONL:BSC=a,ITEM=b;
  - a: BSC number (0~11)
  - b: Execution ITEM (DISPLAY/END-ONL)
- Input/Output

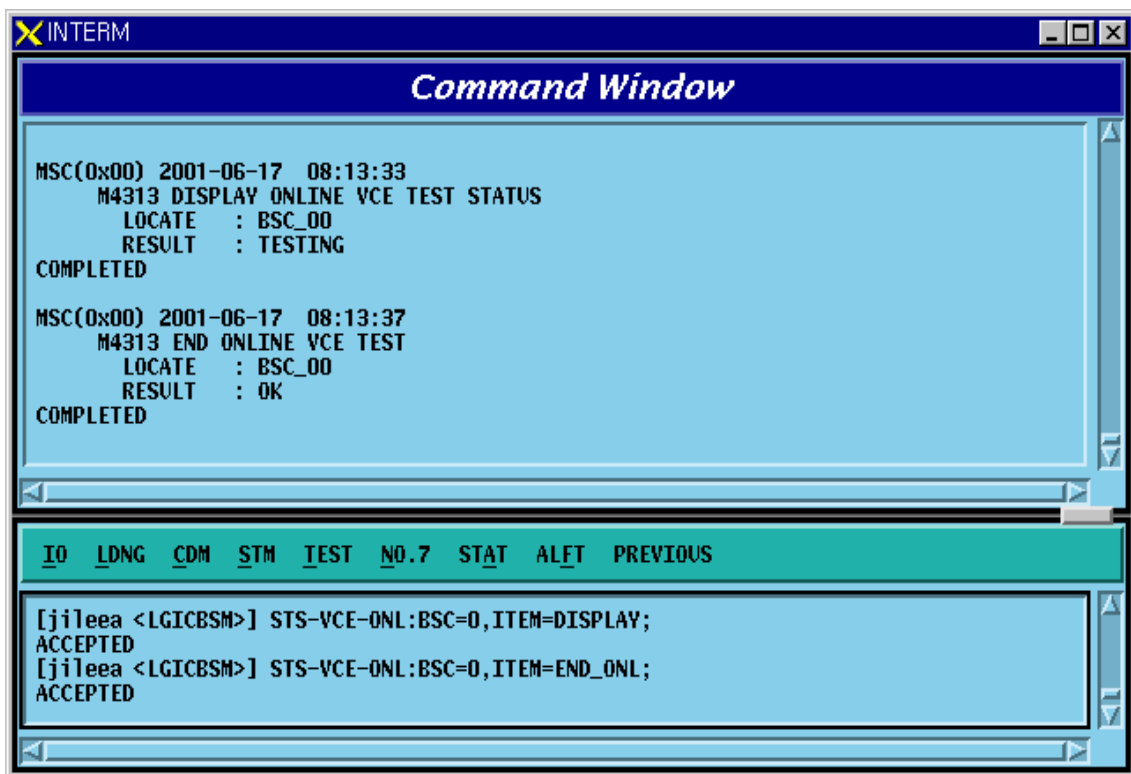


Fig. 4.5-11 On-Line Vocoder Test End Command, Status Display Command Execution Result

## **4.5.4. Link Test Function**

Link test is divided into PING test, IPC test, ATM Path test, and Trunk BER test. PING test checks the Link status of Application Level by using Ping command from Master Processor to each Target Processor. IPC test checks the presence of problems in LINK by conducting IPC Test to the mounted processors/devices. ATM Path test checks presence of faults in ATM LINK Level by conducting ATM Layer Test on the mounted Processor/Devices. Trunk BER test sends/receives the designated number of ATM Cells to the operator designated BTS Link to get Error Rate.

### **4.5.4.1. Trunk BER Test Function**

Function to check the presence of problems in Trunk(16 E1) Link between BTS and BSC. Trunk BER Test analyzes performance per Link of each ALPA and LICA and the analyzed result is displayed in a certain format to BMS. One link is selected and while exchanging as many as the designated number of ATM Cells, test is conducted and Data Error Rate is displayed.

- Command TEST-LINK :BSC=a ,ALPA=b [,CNT=c] [,RATE=d];
  - a: BSC number (0~11)
  - b: ALPA number(0~9)
  - c: Send Cell Count(1 ~ 1,000,000)
  - d: Data Rate(1 ~ 90: Number of Cells transferred per a second)
- Input/Output

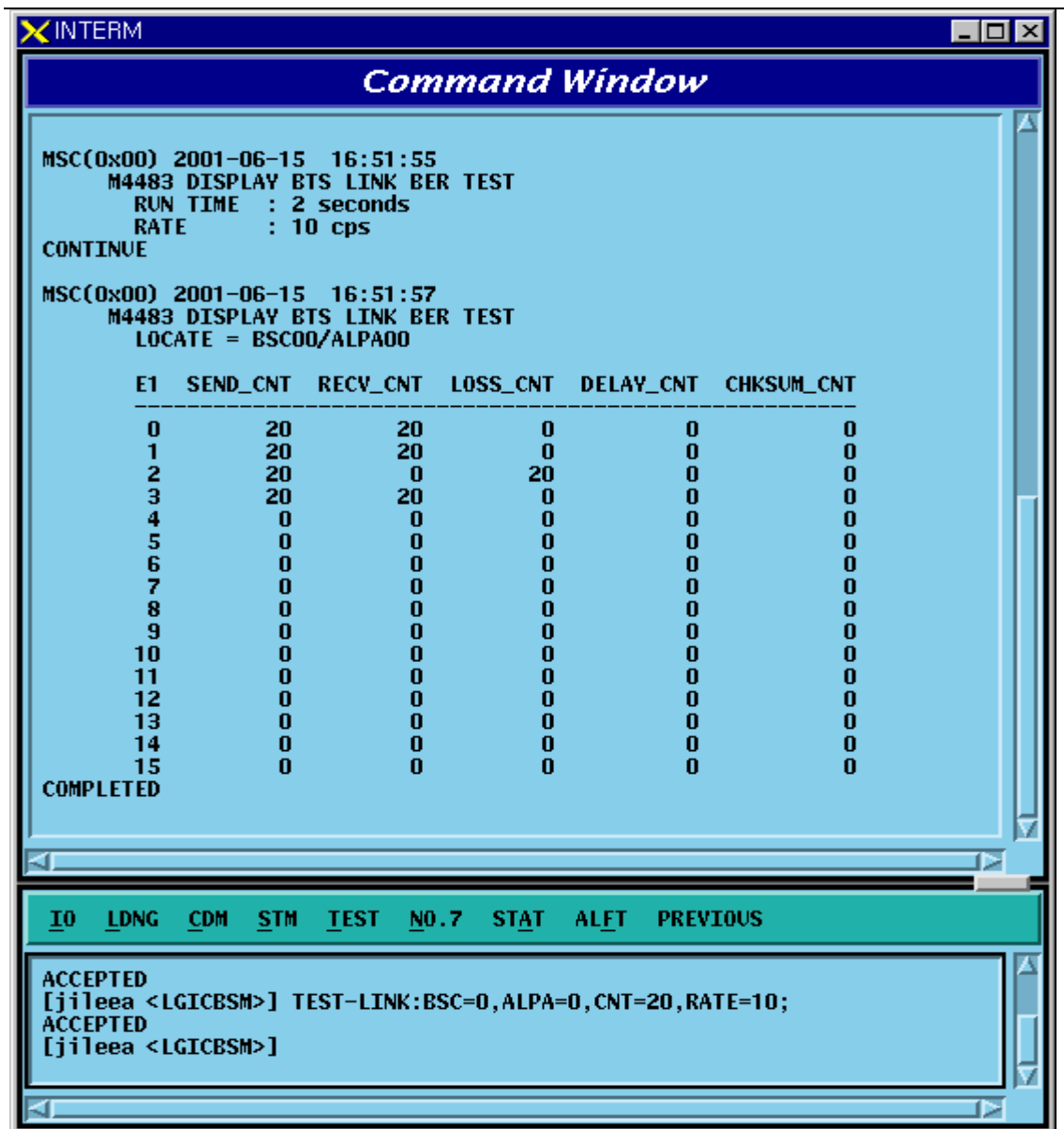


Fig. 4.5-12 Result of Trunk BER Test Performance

#### 4.5.4.2. PING Test Function

Function to check Link Status for the Target Processor by the Master Processor that was input to MMI of BSM by using the Ping command

Ping test is divided into Point To Point Test and Point To Multi Test.

- Command TEST-PING:SRC=a,DST=b[,BSC=c][,BTS=d][,SMP=e][,VMP=f][,PCF=g];
  - a: Source Processor
  - b: Destination Processor(If there is input, it is PTP, if not, it is PTM)
  - c: BSC number(0~11)
  - d: BTS number(0~47)

- e: SMP number(0~5)
- f: VMP number(0~7)
- g: PCF number(0~2)

• Input/Output

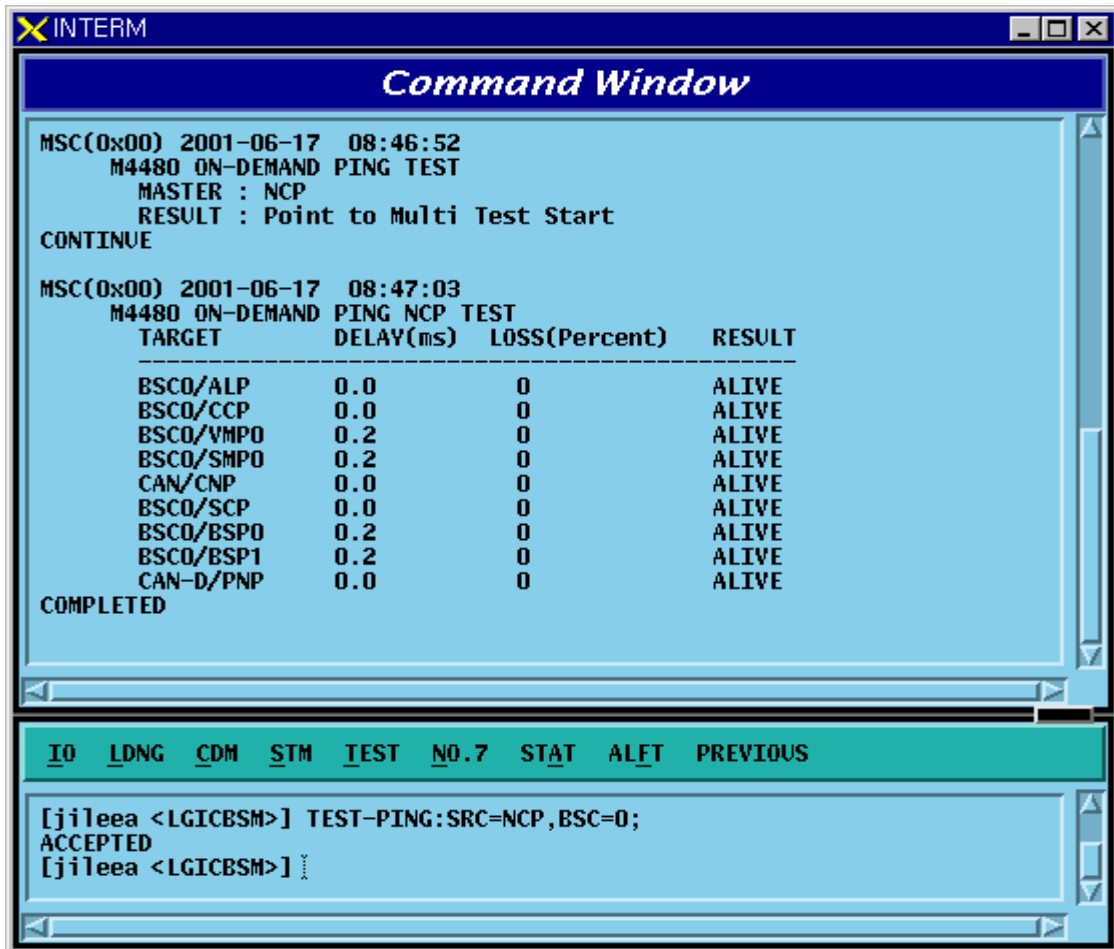


Fig. 4.5-13 Result of PING Test Performance

#### 4.5.4.3. IPC Test Function

Function to check the presence of problems in the Link status between Processor/Device by executing IPC command of Application Level .

IPC Test is divided into PTP test and PTM test.

- Command TEST-IPC :SRC=a [,DST=b] [,BSC=c] [,BTS=d] [,SMP=e] [,VMP=f] [,PCF=g];
  - a: Source Processor
  - b: Destination Processor(If input does exist, it is PTP and if not, it is PTM)
  - c: BSC number(0~11)
  - d: BTS number(0~47)

- e: SMP number(0~5)
- f: VMP number(0~7)
- g: PCF number(0~2)

- Input/Output

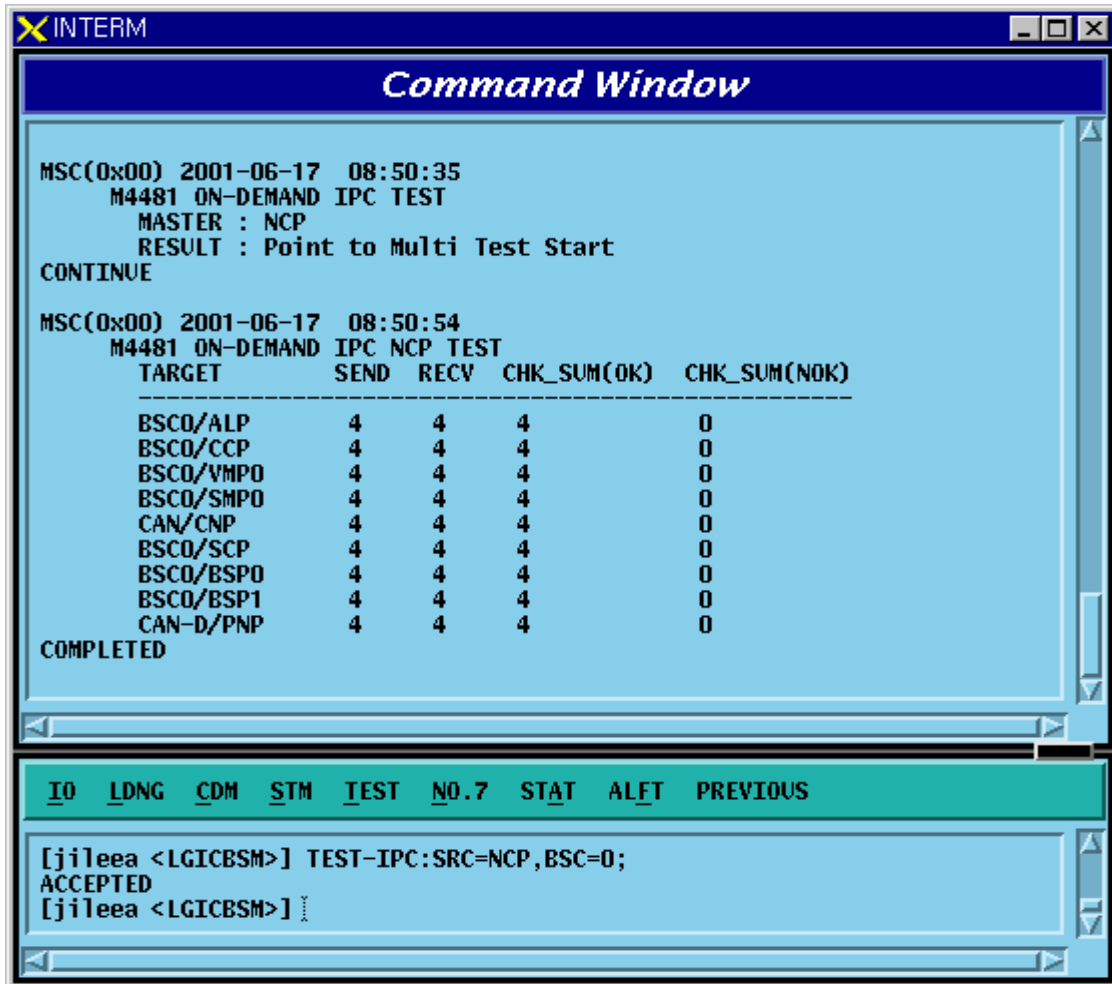


Fig. 4.5-14 Result of IPC Test Performance

#### 4.5.4.4. ATM Path Test Function

Function to check presence of problems in Link Status between Processor and Device by executing ATM CC, LB, PM command.

It is divided into PTP Test and PTM Test.

- Command TEST-

TM:SRC=a[,DST=b],CLASS=c,LEVEL=d[,BSC=e][,BTS=f][,SMP=g] [,VMP=h] [,PCF=i];

a: Source Processor

b: Destination Processor(If input does exist, it is PTP, and if not, it is PTM)

c: Test class(CC: Continuity Check, LB: Loop Back, PM: Execution Monitor)

- d: Test Level(F4: VPC, F5: VCC)
- e: BSC number(0~11)
- f: BTS number(0~47)
- g: SMP number(0~5)
- h: VMP number(0~7)
- i: PCF number(0~2)

• Input/Output

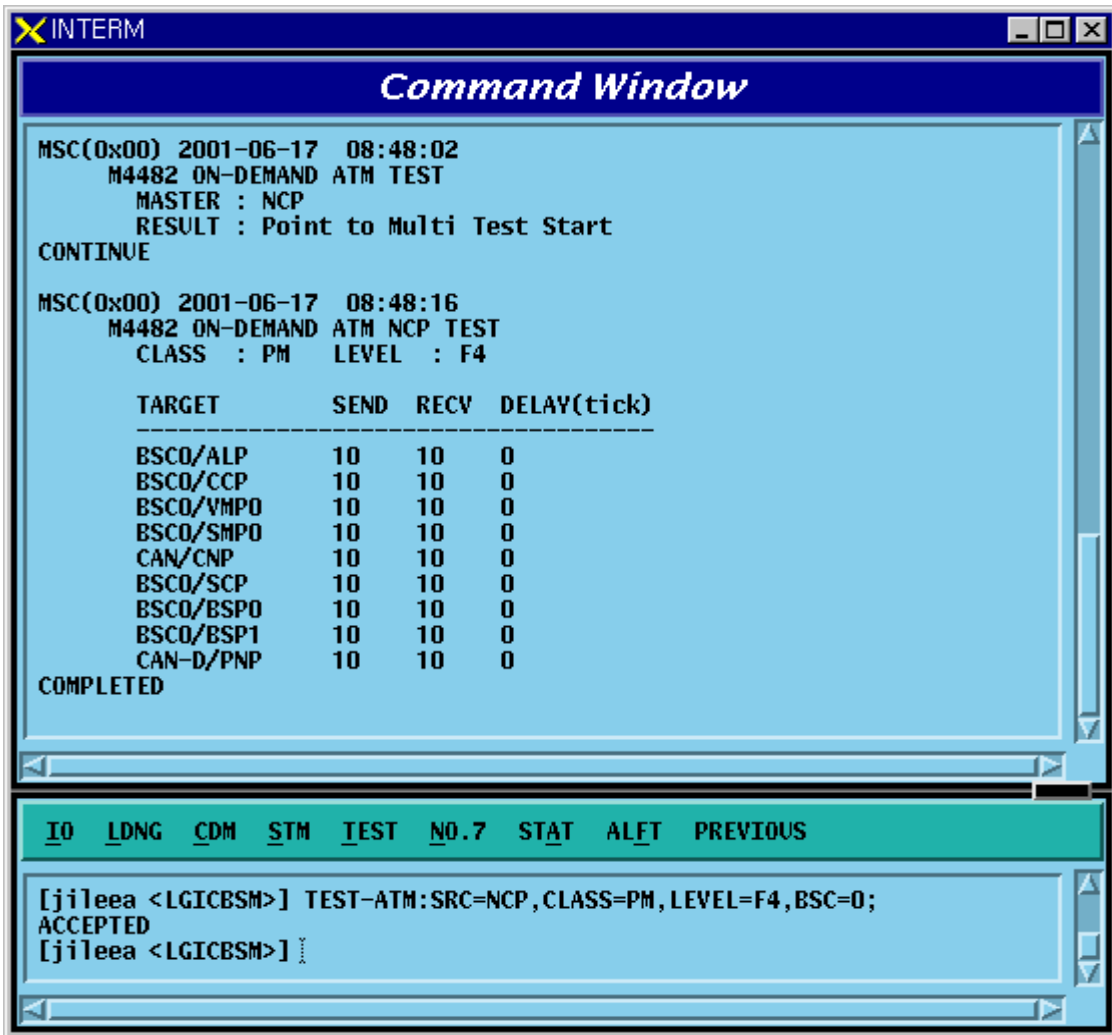


Fig. 4.5-15 Result of ATM Path(PM) Test Performance



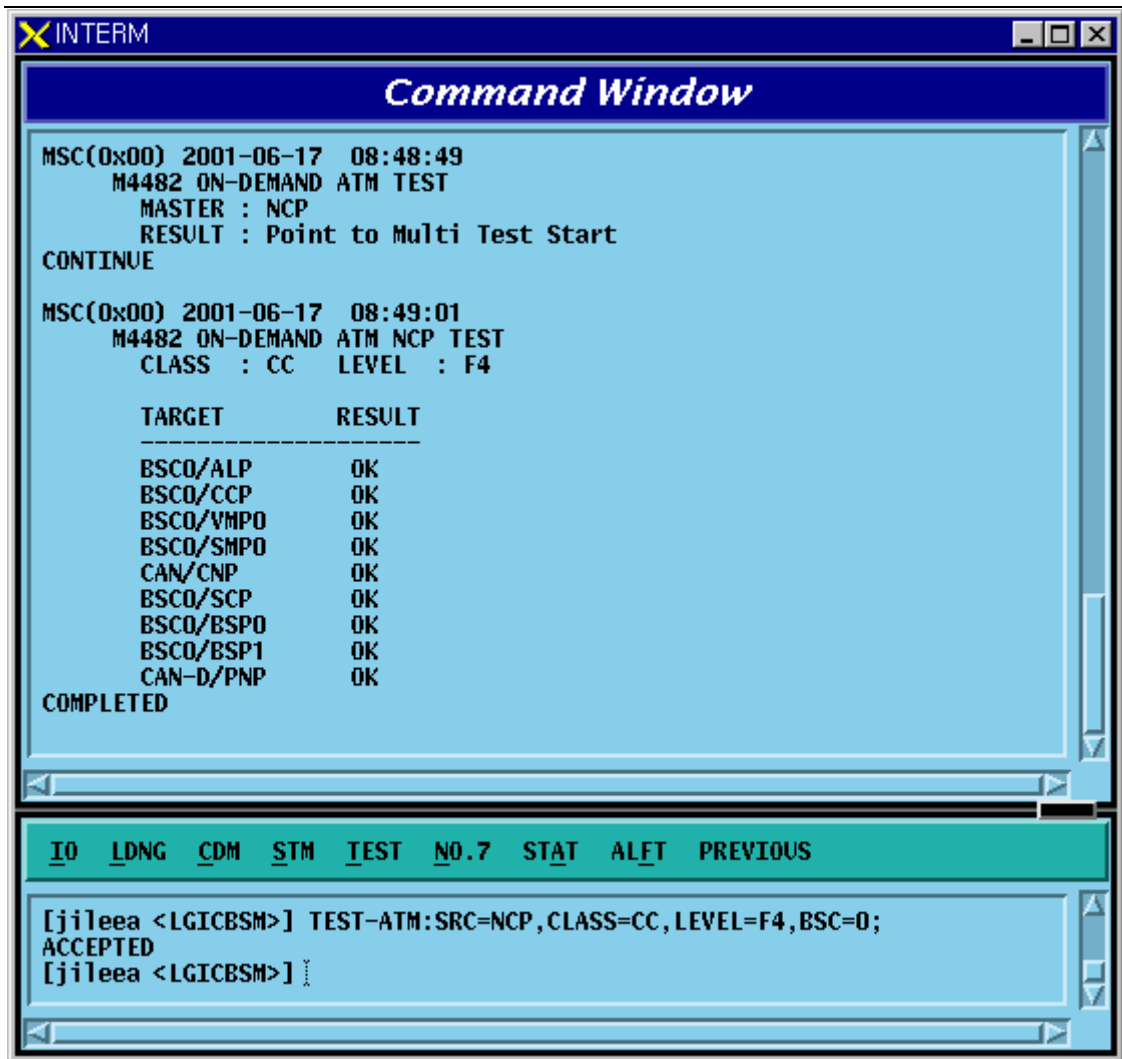


Fig. 4.5-16 Result of ATM Path(CC) Test Performance

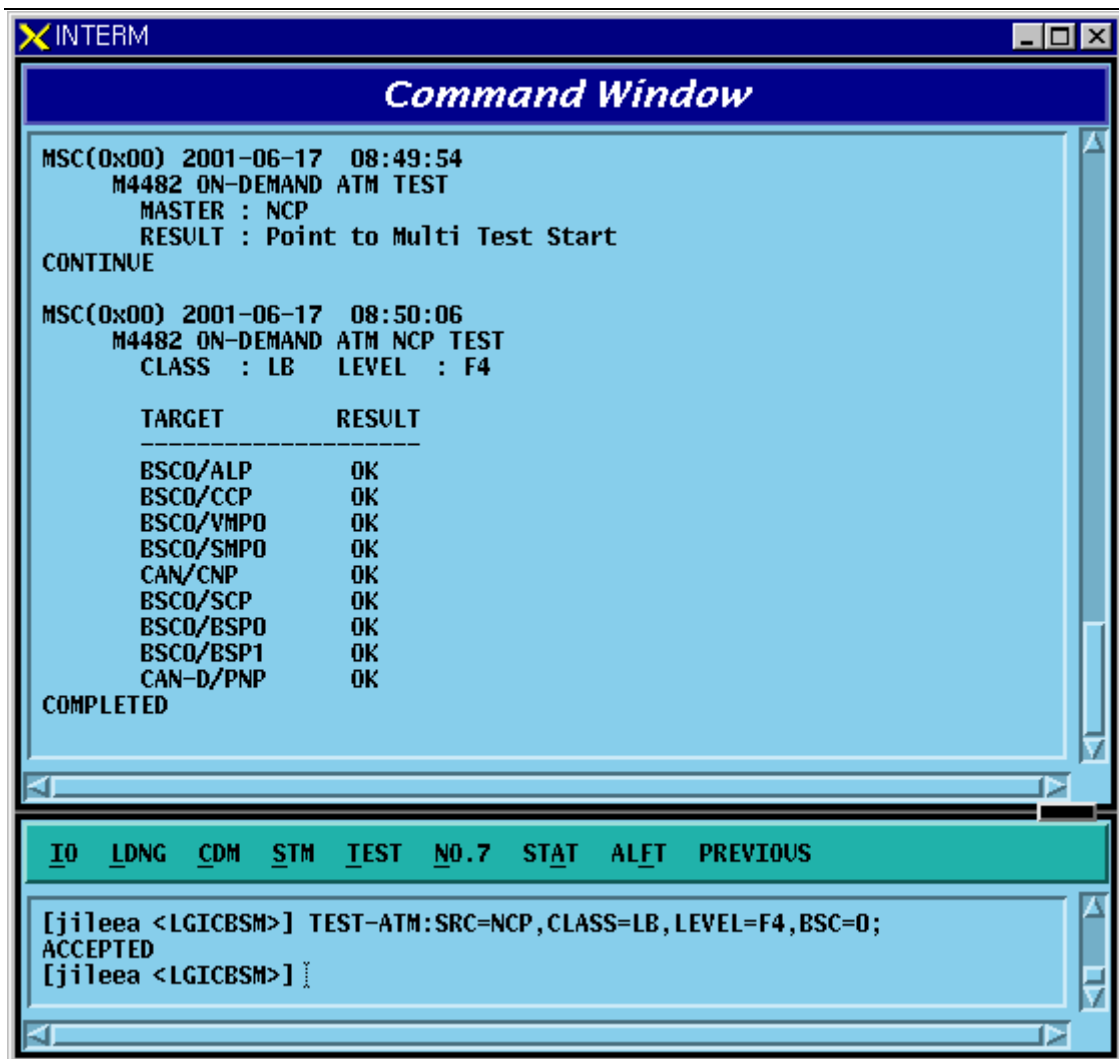


Fig. 4.5-17 Result of ATM Path(LB) Test Execution

### **4.5.5. Command related to BSC Virtual Call Test**

General mobile call is —made by MS, BSS(BSC, BTS), switching system interworking. Because the section between MS and BSS is the place where call environment setup function and modulation and demodulation of voice data are made including allocation of call resource necessary for radio communication, it is responsible for essential function in the mobile communication system. Testing call is the function to check the following: 1) the presence of faults in call processing made between BSS and MS that excludes the MSC function in the course of mobile call processing, and 2) the quality of voice. Since it excludes the MS function to, mutual calls such as M2L, L2M, or M2M cannot be made; however, , but cantest can be performed by selecting one between originating and terminating call. When a testing call was set up, BSS and MS generate markov data and exchange them and by checking if there is any loss of markov data, they calculate quality of voice. Terminating call inputs IMSI value of MS to be tested in BSM and trys paging to set up a call. And Originating call sets up a call by selecting testing call function of MS. (Originating call is not related to BSM function.)

- BSC Testing Call

It checks the following: 1) if there is any faults in call processing that is carried out between BSC(SLP) – BTS(CE) – MSs and 2) the quality of voice. If a Call is attempted in BSM by inputting the the information (i.e., the number of MS, BSC number, BTS number, sector, frequency resource, MS call setup data (Station Class Mark, Slot Cycle Index), Service Option(13K Markov, 8K Markov, 13K LoopBack, 8K LoopBack), and voice packet data rate(Full, half, Quarter, Eighth , Variable rate)), then Call Link between SLP–CE–MS is set up (setup of testing call) according to the data input. Once a Call is set up, SLP and MS calculate Frame Error Rate while exchanging markov data. When a Call is set up and a Call is released, BSM displays data of call resource, FER, and reason for release.

- Service Option

Service Options of present use for Testing call at BSC include 8K Markov, 13K Markov, 8K loopback, 13K loopback .

- Markov

Once Testing Call is set up, SLP and MS synchronizes their time, and generate identical data in sequence by Markov Algorithm. SLP and MS receive each other's data and compare them with their own to detect errors in the data frame. It can obtain Forward FER(measured at MS) and Reverse FER(measured at SLP).

LoopBack: When Testing Call is set up, SLP generates voice data and sends them to MS. MS performs lookback on this data as it is and SLP compares returned data with

the original data to validate the quality of voice. (FER measured at SLP)

- Data Rate

User can designate voice data rate to be used for testing call. The data rate is divided into the following: Full rate, Half rate, Quarter rate, Eighth rate, and Variable rate.

#### **4.5.5.1. BSC Virtual Call Setup Function**

Function to designate various options and setting up Call to a specific MS or all the MSs MS to be tested should be entered to BSM DB with INS-TEST-MS command.

When TEST\_KEY is not input, testing calls are set up for all the MSs stored in DB. Testing Call is attempted for 60 minutes at a maximum. Once a Call is set up, it is maintained for 60 minutes. If a call is disconnected due to the occurrence of faults, or when a user released the call at random, a message for the reason of call release is displayed.

- Command SET-TEST-CALL :BSC=a ,BTS=b ,SECTOR=c ,CDMA=d ,SCI=e ,SCM=f , OPTI=g ,DTYPE=h ,TIME=i [,TEST\_KEY=j];

- a: BSC number (0~11)

- b: BTS number (0~47)

- c: sector (ALPHA/BETA/GAMMA/DELTA/ZETA/EPSILON)

- d: CDMA number (0~11)

- e: SLOT CYCLE Index (0~7)

- f: SLOT mode (SLOT\_M, NON\_SLT\_M)

- g: option (MKV\_13K/MKV\_8K/LB\_13K/LB\_8K)

- h: Data Rate (VARIABLE/FULL/HALF/QUART/EIGHT )

- i: TIME(1~60min)

- j: Test Key(1 ~ 100)

- Input/Output

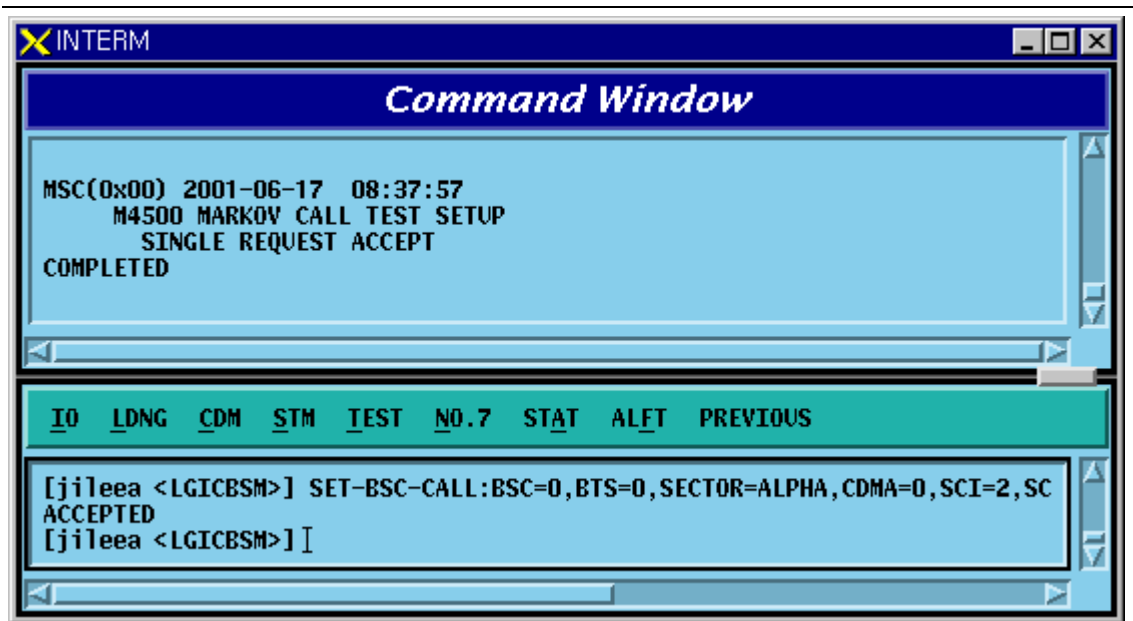


Fig. 4.5-18 BSC Virtual Call Setup Command INTERM Display

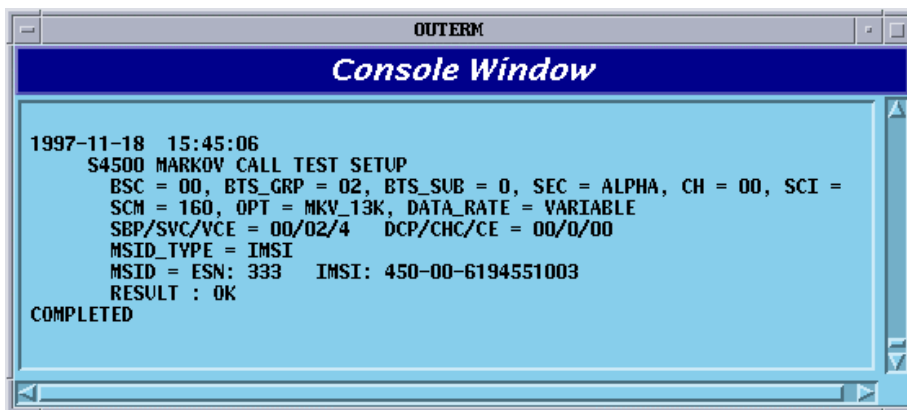


Fig. 4.5-19 Console Window Display at the setup of BSC Virtual Call

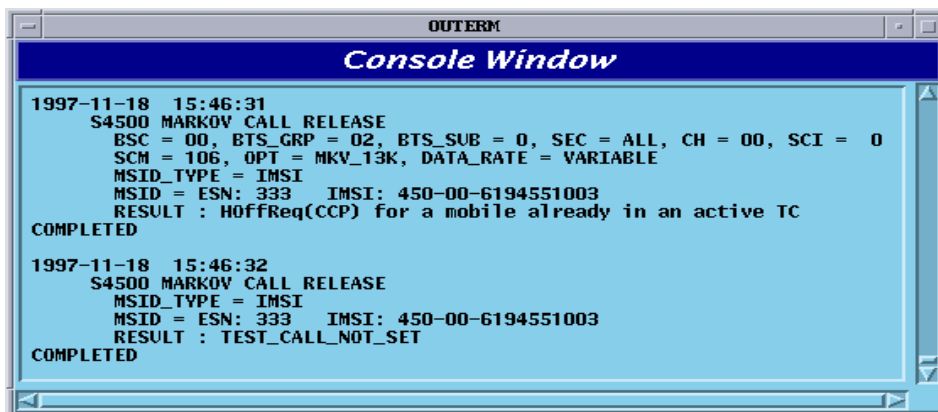


Fig. 4.5-20 Display at the Termination of BSC Virtual Call

#### 4.5.5.2. Virtual Call Release Function

Function to release a call for a specific MS or all the MSs where a virtual call set up. The output resulting from virtual call release is displayed by "Release by MMC".

- Command REL-TEST-CALL :BSC=a ,BTS=b [,TEST\_KEY=c];
  - a: BSC number (0~11)
  - b: BTS number (0~15)
  - c: TEST KEY(1~100)
- Input/Output

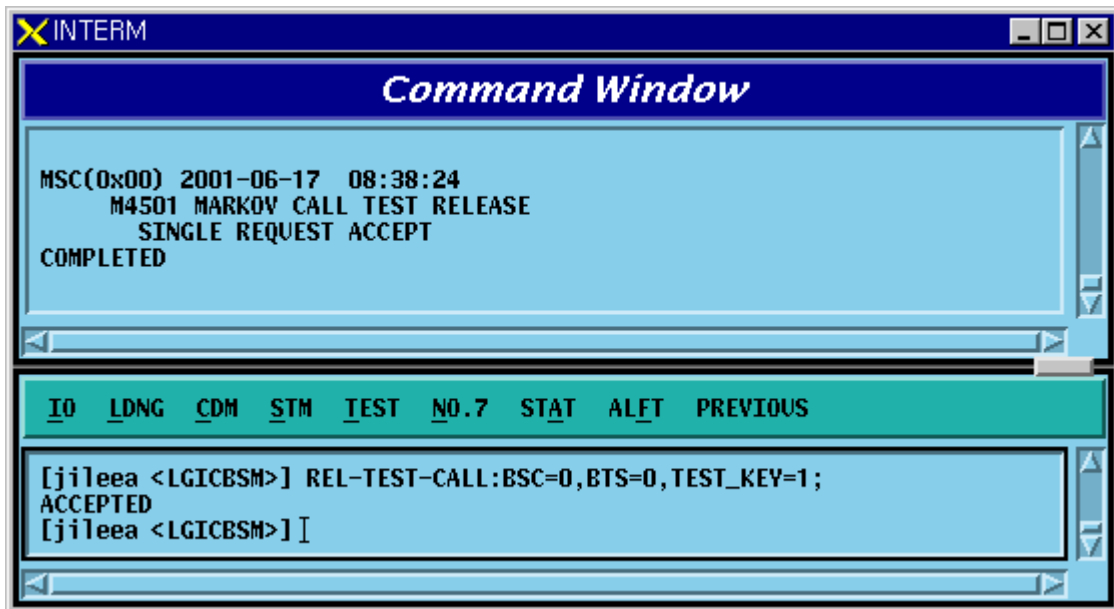


Fig. 4.5-21 Result of BSC Virtual Call Release Command Execution

#### 4.5.5.3. Testing MS Display Function

Function to display MSs to be used for the BSC Virtual Call test.

- Command DIS-TEST-MS :BSC=a ,BTS=b;
  - a: BSC number (0~11)
  - b: BTS number (0~47)
- Input/Output

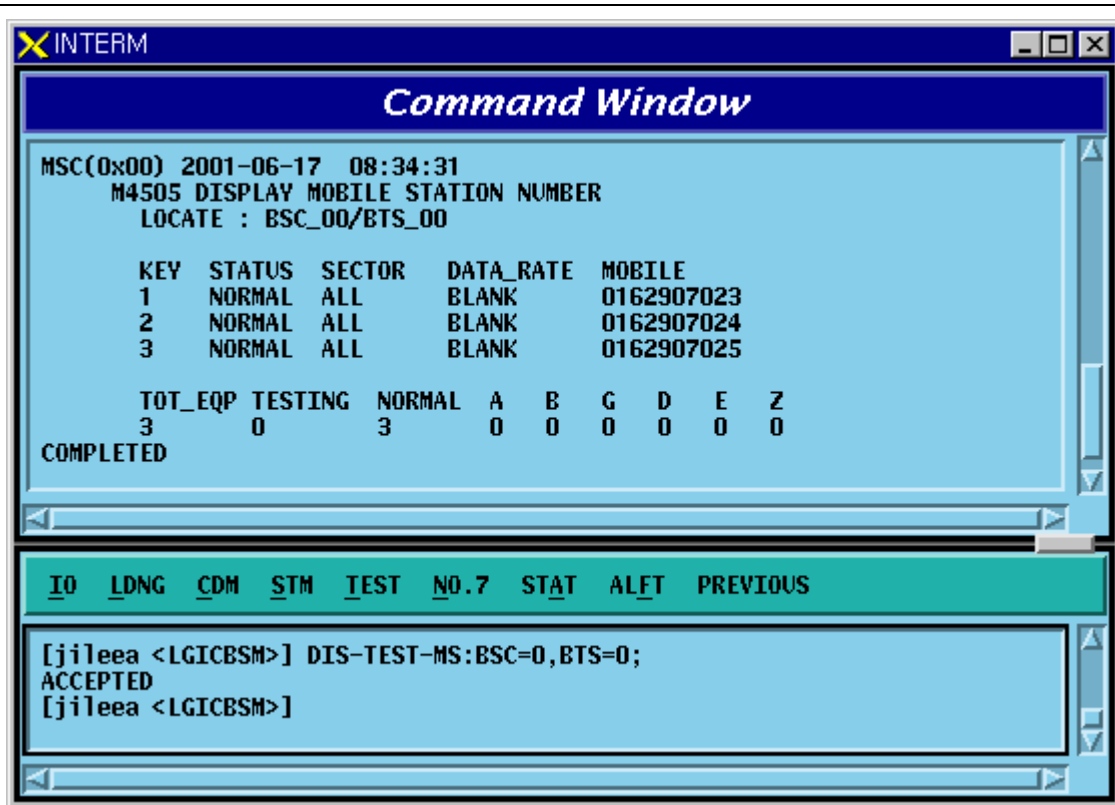


Fig. 4.5-22 Presently registered Testing MS Display

#### 4.5.5.4. MS Supplementary Function

Function to register MS to be used for the BSC Virtual test.

For a test of virtual call, first register MS.

- Command `INS-TEST-MS :BSC=a ,BTS=b ,TEST_KEY=c [,MSIN=d];`
  - a: BSC number (0~11)
  - b: BTS number (0~47)
  - c: TEST KEY(1~100)
  - d: IMSI of MS
- Input/Output

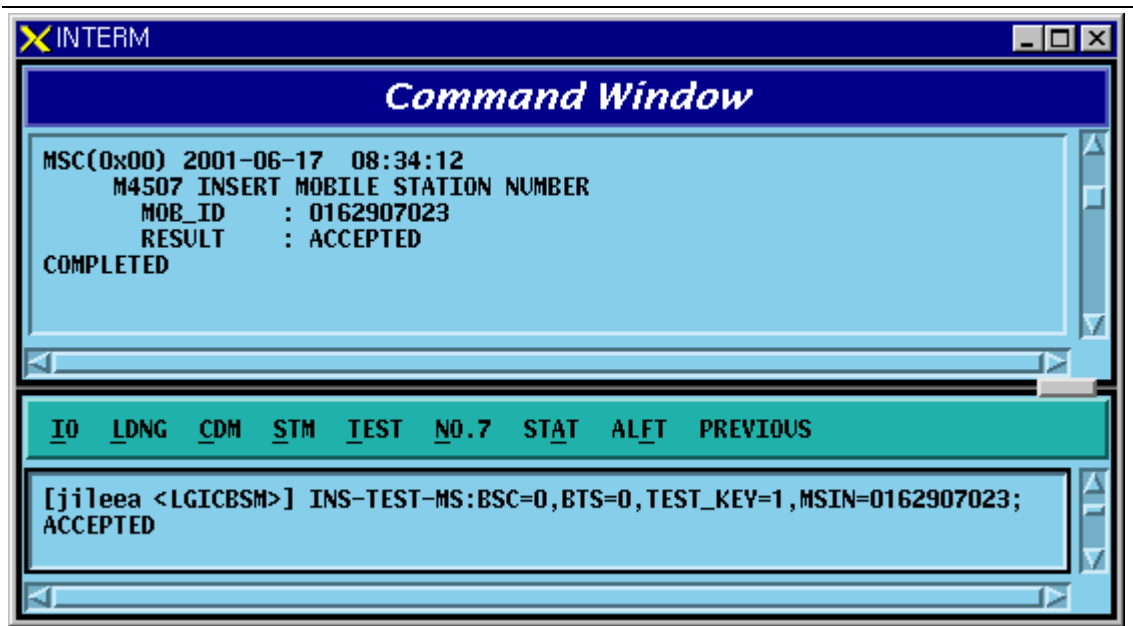


Fig. 4.5-23 Testing MS Insert Result Display

#### 4.5.5.5. MS Delete Function

Function to delete MS registered on the test list of BSC Virtual Call

- Command DEL-TEST-MS :TEST\_KEY=a;
  - a: TEST\_KEY of Mobile to be deleted
- Insert/Output

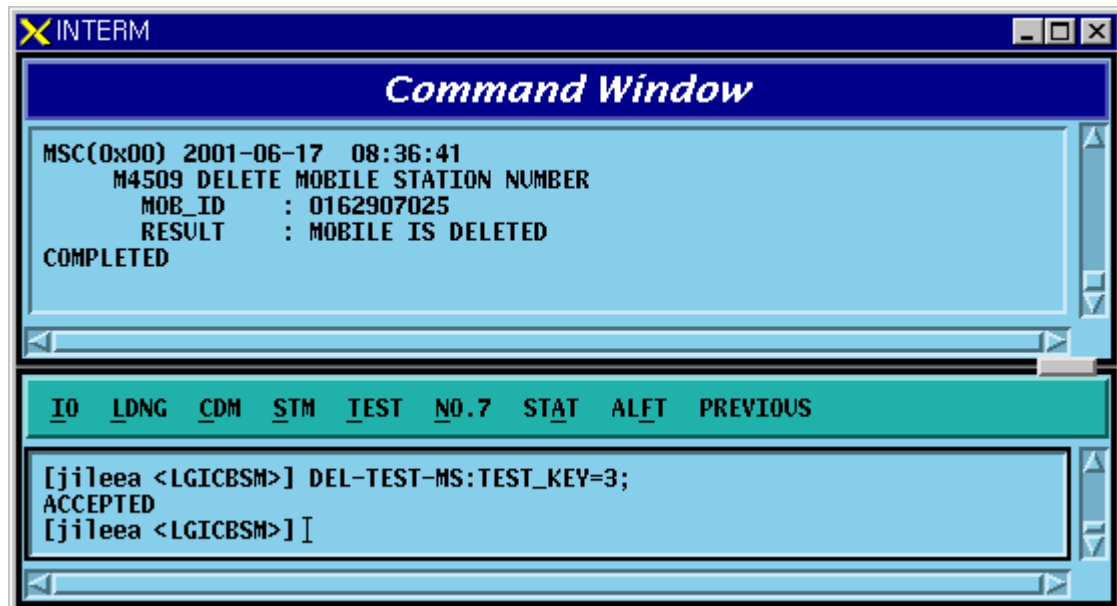


Fig. 4.5-24 Delete MS Execution Result



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## **4.5.6. TRAFFIC PATH TESTING FUNCTION**

it is a test enabling to decide if there is presence of failure with designated traffic path by setting a traffic path for BSC virtual call for a specific MS with the designated call resources and then measuring PER.. The kinds of virtual call include Markov and Loop Back., There are 8K and 13K respectively by service option. Call resources that the user can designate are as follows: Selector Slave Processor, Trunk, and BTS channel Chip. In one BSC, 100 virtual calls can be set up simultaneously separated from testing function of virtual call. Once a call is set up, a message type which is identical to the message type coming from BSC virtual call setup process is displayed.

### **4.5.6.1. Traffic Path Testing Setup Function**

Function to set up a Call for the designated Traffic Path

- Command SET-PATH-CALL : IMSI=a , BSC=b , SMP=c , SLP=d , SLPSLV = e [,TRK = f], BTS= g ,SECTOR = h ,CDMA = i ,RCP= j , MCPA=k , CHIP=l , SCI=m , SCM=n , OPTI=o , DTYPE=p [,TIME=q];

a : IMSI

b : BSC\_Number(0~11)

c : SMP\_Number(0~4)

d : SLP\_Number(0~19)

e : SLP\_Slave\_Number(0~3)

f : Trunk\_Number(0~19)

g : BTS\_Number(0~47)

h : Sector\_Id(0~5)

i : CDMA\_Channel\_Number(0~11)

j : RCP\_Number(0~9)

k : MCPA\_Number(0~9)

l : CHIP\_Number(0~1)

m : Slot\_Cycle\_Index(0~7)

n : Station\_Class\_Mark(SLOT\_M, NON\_SLT\_M)

o : Service\_Option(MKV\_13K, MKV\_8K, LB\_13k, LB\_8K)

p : Test\_data\_Type(VARIABLE, RATE\_FULL, RATE\_HALF, RATE\_QUAR, RATE\_EIGHT)

q : TRACE\_TIME(1~60min)

- Input/Output

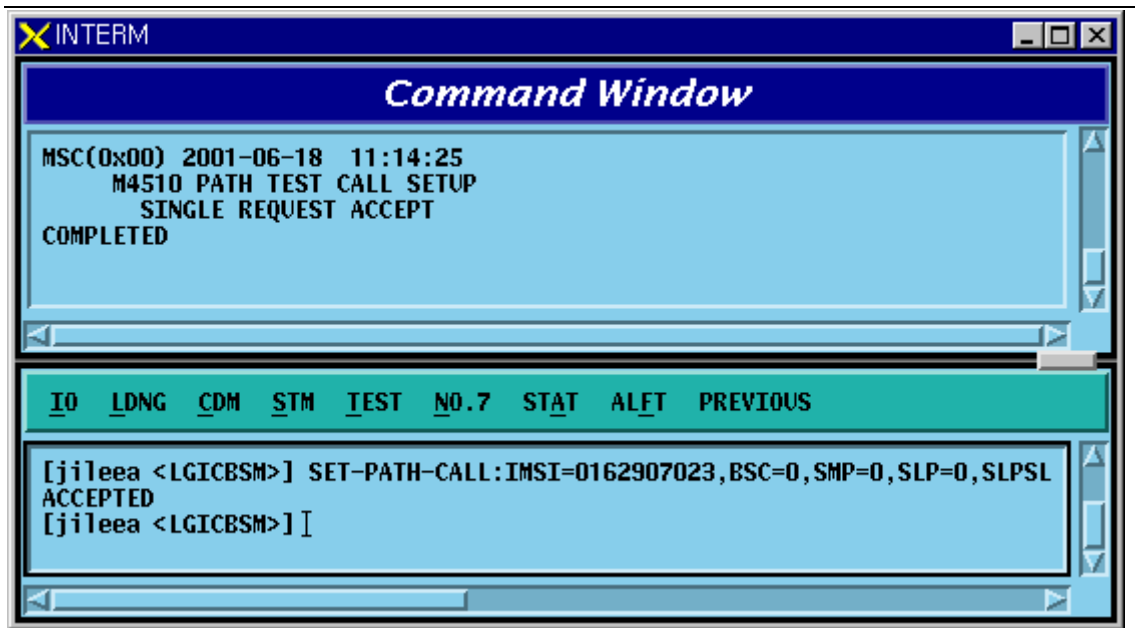


Fig. 4.5-25 Traffic Path Setup Command Execution Result Display(Interm Window)

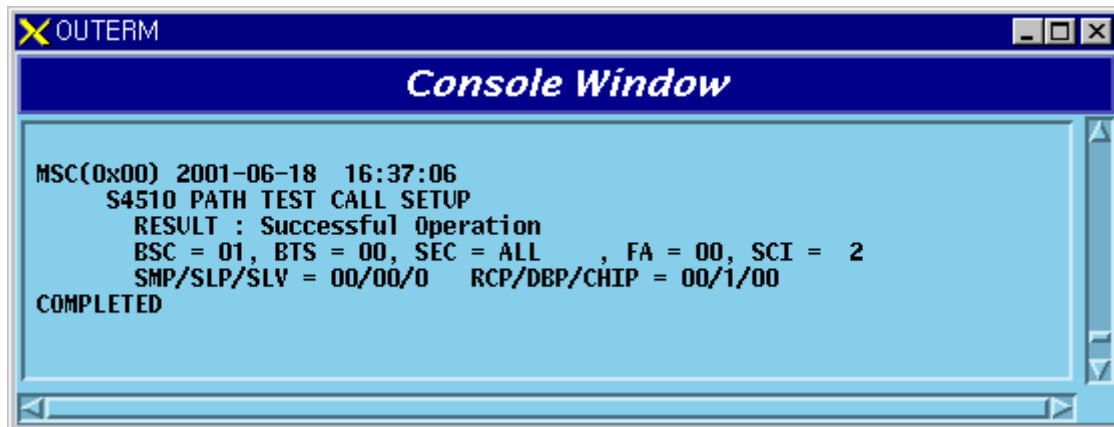


Fig. 4.5-26 Traffic Path Setup Command Execution Result Display(Console Window)

#### 4.5.6.2. Traffic Path Release Function

Function to release a Call to MS of a specific BSC, BTS where a virtual call is set up.

- Command REL-PATH-CALL :BSC=a ,BTS=b;
  - a: BSC number (0~11)
  - b: BTS number (0~15)
- Input/Output

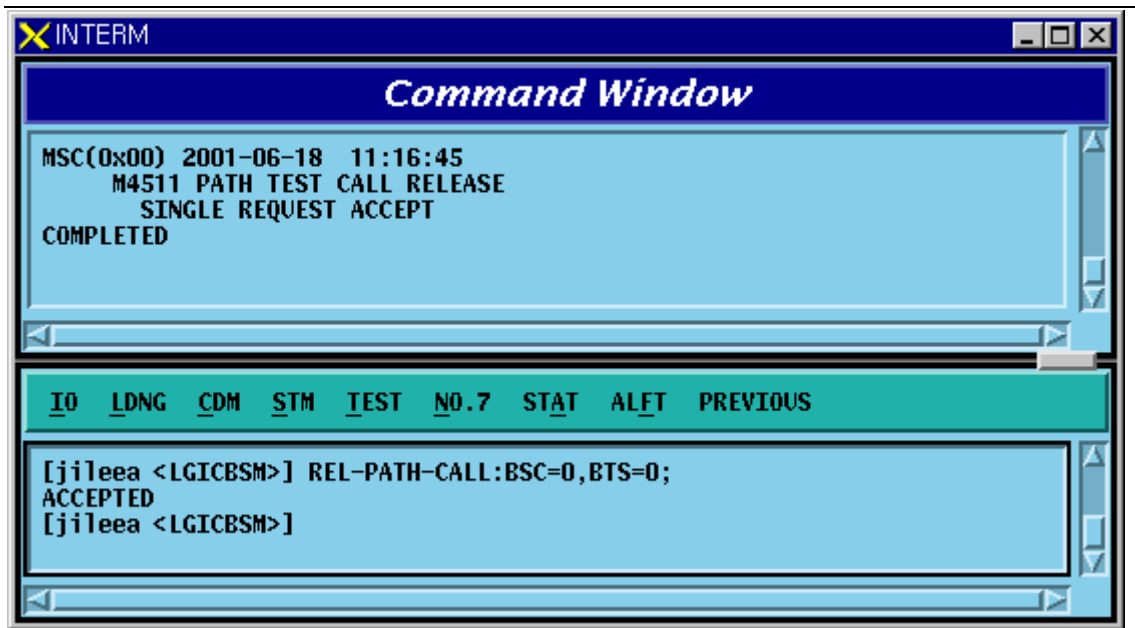


Fig. 4.5-27 Traffic Path Release Command Execution Result Display(Interm Window)

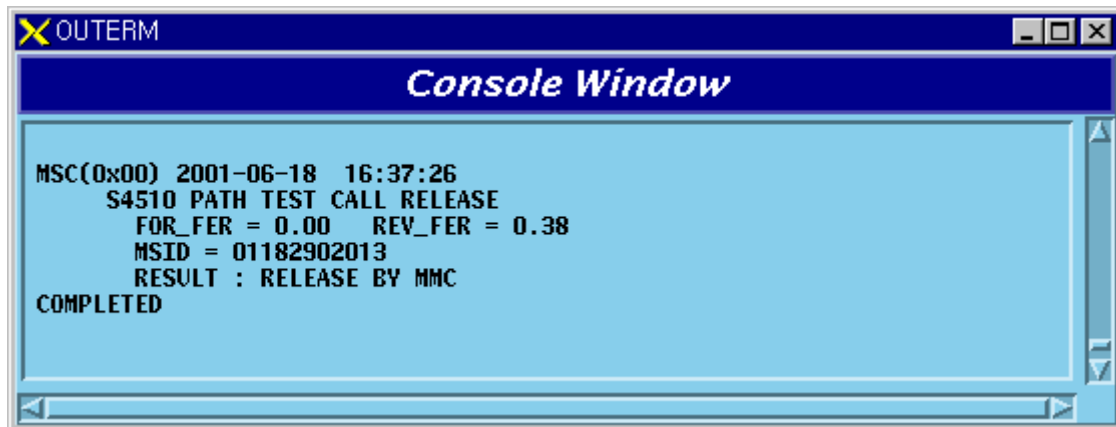


Fig. 4.5-28 Traffic Path Release Command Execution Result Display(Console Window)