



## DEFENSE INFORMATION SYSTEMS AGENCY

JOINT INTEROPERABILITY TEST COMMAND

P.O. BOX 12798

FORT HUACHUCA, ARIZONA 85670-2798

IN REPLY  
REFER TO: Networks and Transport Division (JTE)

12 Oct 05

### MEMORANDUM FOR DISTRIBUTION

**SUBJECT:** Special Interoperability Test Certification of Tone Commander 6210T, 6210U, 6220T, and 6220U (Includes the 6030X Expansion Module Version 01.01.03) and 6220T-TSG Integrated Services Digital Network (ISDN) Telephones with Software Version 01.06.12

**References:** (a) DOD Directive 4630.5, "Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)," 5 May 2004  
(b) CJCSI 6212.01C, "Interoperability and Supportability of Information Technology and National Security Systems," 20 November 2003

1. References (a) and (b) establish the Defense Information Systems Agency (DISA), Joint Interoperability Test Command (JITC), as the responsible organization for interoperability test certification. Additional references are provided in enclosure 1.
2. Tone Commander 6210T, 6210U, 6220T, and 6220U (Includes the 6030X Expansion Module Version 01.01.03) and 6220T-TSG ISDN Telephones with Software Version 01.06.12, hereinafter referred to as the systems under test (SUT), met all of the interface and functional requirements and are certified for joint use within the Defense Switched Network (DSN). The SUT met the interface and functional requirements for Customer Premise Equipment as set forth in appendix 7 of reference (c). Testing was conducted using test procedures derived from reference (d). This certification expires upon changes that affect interoperability, but no later than three years from the date of this memorandum.
3. This certification is based on interoperability testing conducted by JITC at the Global Information Grid Network Test Facility, Fort Huachuca, Arizona, from 8 through 16 March 2005, and 25 through 29 July 2005, and approval of vendor Letters of Compliance completed on 5 August 2005. The Certification Testing Summary (enclosure 2) documents the test results and describes the test configuration. Users should verify interoperability before deploying the SUT in an environment that varies significantly from that described.
4. The Functional Requirements used to evaluate the interoperability of the SUT and the interoperability statuses are indicated in table 1.

JITC Memo, JTE, Special Interoperability Test Certification of Tone Commander 6210T, 6210U, 6220T, and 6220U (Includes the 6030X Expansion Module Version 01.01.03) and 6220T-TSG Integrated Services Digital Network (ISDN) Telephones with Software Version 01.06.12

**Table 1. SUT Functional Requirements and Interoperability Status**

Telephone	Interface	Critical	Certified	Functional Requirements	Status	Reference
6210T	ISDN BRI NI2 S/T	Yes	Yes	MLPP in accordance with GSCR Section 3 (C)	Met	A7.5
				BRI S/T interface in accordance with ANSI T1.605-1991 (R)	Met	A7.5.3
				ISDN NI 1/2 compatible in accordance with GSCR 2.3.3(R)	Met	A7.5.4
				FCC Part 68 and Part 15 compliance	Met	A7.5
				MLPP Precedence Call Alerting (R)	Met	A7.5
6210U	ISDN BRI NI2 U	Yes	Yes	MLPP in accordance with GSCR Section 3 (C)	Met	A7.5
				BRI U interface in accordance with ANSI T1.601-1999 (R)	Met	A7.5.2
				ISDN NI 1/2 compatible in accordance with GSCR 2.3.3(R)	Met	A7.5.4
				FCC Part 68 and Part 15 compliance	Met	A7.5
				MLPP Precedence Call Alerting (R)	Met	A7.5
6220T	ISDN BRI NI2 S/T	Yes	Yes	MLPP in accordance with GSCR Section 3 (C)	Met	A7.5
				BRI S/T interface in accordance with ANSI T1.605-1991 (R)	Met	A7.5.3
				ISDN NI 1/2 compatible in accordance with GSCR 2.3.3(R)	Met	A7.5.4
				FCC Part 68 and Part 15 compliance	Met	A7.5
				MLPP Precedence Call Alerting (R)	Met	A7.5
6220U	ISDN BRI NI2 U	Yes	Yes	MLPP in accordance with GSCR Section 3 (C)	Met	A7.5
				BRI U interface in accordance with ANSI T1.601-1999 (R)	Met	A7.5.2
				ISDN NI 1/2 compatible in accordance with GSCR 2.3.3(R)	Met	A7.5.4
				FCC Part 68 and Part 15 compliance	Met	A7.5
				MLPP Precedence Call Alerting (R)	Met	A7.5
6220T-TSG	ISDN BRI NI2 S/T	Yes	Yes	MLPP in accordance with GSCR Section 3 (C)	Met	A7.5
				BRI S/T interface in accordance with ANSI T1.605-1991 (R)	Met	A7.5.3
				ISDN NI 1/2 compatible in accordance with GSCR 2.3.3(R)	Met	A7.5.4
				FCC Part 68 and Part 15 compliance	Met	A7.5
				MLPP Precedence Call Alerting (R)	Met	A7.5

LEGEND:

A	- GSCR Appendix	R	- Required
ANSI	- American National Standards Institute	S/T	- 4-Wire ISDN BRI interface
BRI	- Basic Rate Interface	SUT	- Systems Under Test
C	- Conditional	T	- Part designator for S/T interface
FCC	- Federal Communication Commission	T1.601	- ISDN Basic Access Interface for Use on Metallic Loops for Application at the Network Side of Network Termination, Layer 1 Specification
GSCR	- Generic Switching Center Requirements	T1.605	- ISDN Basic Access Interface for S/T Reference Points and Layer 1 Specification
ISDN	- Integrated Services Digital Network	TSG	- Telephone Secure Group
MLPP	- Multi-Level Precedence and Preemption	U	- 2-Wire ISDN BRI interface
NI 1/2	- National ISDN 1 or 2		
NI2	- National ISDN 2		

5. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) system, which uses Unclassified-But-Sensitive Internet Protocol Router Network (NIPRNet) e-mail. More comprehensive interoperability status information is available via the JITC System Tracking Program (STP). The STP is accessible by .mil/.gov users on the NIPRNet at <https://stp.fhu.disa.mil>. Test reports, lessons learned, and related testing documents and references are on the JITC Joint Interoperability Tool (JIT) at <http://jit.fhu.disa.mil> (NIPRNet), or <http://199.208.204.125> (SIPRNet). Information related to DSN testing is on the Telecom Switched Services Interoperability (TSSI) website at <http://jitc.fhu.disa.mil/tssi>.

JITC Memo, JTE, Special Interoperability Test Certification of Tone Commander 6210T, 6210U, 6220T, and 6220U (Includes the 6030X Expansion Module Version 01.01.03) and 6220T-TSG Integrated Services Digital Network (ISDN) Telephones with Software Version 01.06.12

6. The JITC point of contact is Mr. Michael Napier, DSN 879-6787, commercial (520) 538-6787, FAX DSN 879-4347, or e-mail to Michael.Napier@disa.mil.

FOR THE COMMANDER:



RICHARD A. MEADOR  
Chief  
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Washington, DC 20301

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20755-6496

Defense Information Systems Agency (DISA), ATTN: GS23 (Mr. Osman), Room 5w23, 5275  
Leesburg Pike (RTE 7), Falls Church, VA 22041

## **ADDITIONAL REFERENCES**

- (c) Defense Information Systems Agency, "Department of Defense Voice Networks Generic Switching Center Requirements (GSCR), Incorporated Change 1," 1 March 2005
- (d) Joint Interoperability Test Command, "Defense Switched Network Generic Switch Test Plan (GSTP)," 23 April 2004

## CERTIFICATION TESTING SUMMARY

**1. SYSTEM TITLE.** Tone Commander 6210T, 6210U, 6220T, and 6220U (Includes the 6030X Expansion Module Version 01.01.03) and 6220T-TSG Integrated Services Digital Network (ISDN) Telephones with Software Version 01.06.12, hereinafter referred to as the systems under test (SUT).

**2. PROPONENT.** Defense Information Systems Agency (DISA).

**3. PROGRAM MANAGER.** Mr. Howard Osman, GS23, Room 5W23, 5275 Leesburg Pike, Falls Church, VA 22041, e-mail: Howard.Osman@disa.mil.

**4. TESTER.** Joint Interoperability Test Command (JITC), Fort Huachuca, Arizona.

**5. SYSTEM UNDER TEST DESCRIPTION.** The SUT currently offers two telephone solutions: the 6210 and 6220 with various, specialized adjuncts and computer applications. The SUT software upgrade capabilities are performed using a proprietary BootStrap downloadable device. The five 6200 series models differ in number of multifunction keys provided and type of ISDN connections. All models are available in "U" or "S/T" interfaces with the exception of the 6220T-TSG, which is only available in the "S/T" interface. The interface versions supported are U or S/T, with Auto-Service Profile Identifier (SPID) detection, National ISDN Parameter Down-Loading, and auto-switch detection. The U models include a built-in Network Termination 1 (NT1) allowing direct connections to the ISDN line in a point-to-point arrangement. An additional S/T connection at the base of the telephone allows another ISDN device to connect to the network via the built-in NT1. The S/T models require an external NT1. Two ISDN telephones can share a single ISDN Basic Rate Interface line in a multipoint arrangement. The 6210T and 6210U small key-phones have ten programmable appearance or feature buttons with tri-color Light Emitting Diodes (LEDs). The 6220T and 6220U large key-phones have 20 programmable appearance or feature buttons with tri-color LEDs. The 6220T-TSG has 20 programmable appearance or feature buttons with tri-color LEDs. The 6030X Expansion Module with Software Version 01.01.03 option adds 30 multifunction keys to any 6210 or 6220 telephone with the exception of the 6220T-TSG. The Tone Commander 6200 Series telephones offer ISDN full feature capability with automatic setup. The SUT features include:

### 6210 and 6220 Series Telephones:

- AutoSPID and parameter download
- Call log
- Call timer
- Last number redial
- Speed dial
- Hot key dialing
- Direct station select
- Call directory

- Flexible ringing options
- Automatic switch detection
- Message waiting indication
- Ring control for shared lines
- Tilt display
- Integrated speakerphone
- Voice announce
- Handset or headset operation

The 6220T-TSG is an on-hook secure version of the ISDN telephone with feature differences from the standard 6210 and 6220 models. This device is designed for secure but not classified communications since it does not provide encryption.

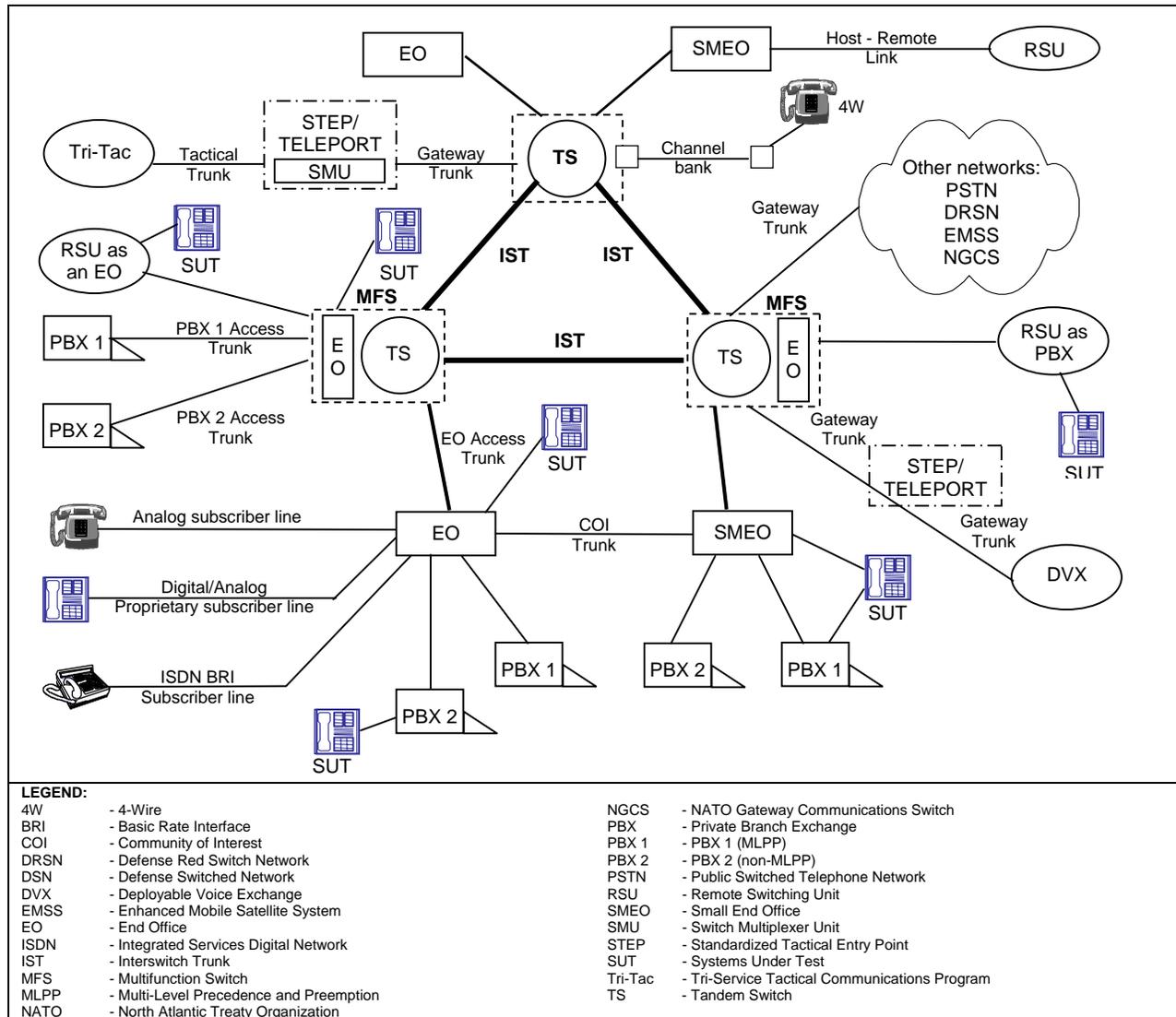
#### 6220T-TSG ISDN Telephone:

- AutoSPID and parameter download
- Call log
- Call timer
- Last number redial
- Speed dial
- Direct station select
- Call directory
- Flexible ringing options
- Automatic switch detection
- Message waiting indication
- Ring control for shared lines
- Tilt display

The following firmware and hardware functions are disabled on 6220T-TSG Telephone:

- Hot Key Dialing
- Voice announcement features
- Feature Activation (FA) call options are removed from menus. On-hook FA activation does not initiate calls; FA (call) setting.
- User must be off-hook prior to selecting Call Appearance, Direct Station Selection, speed-dial keys, or dialing from the call directory or call log.
- On-hook soft key redial not provided, call directory menu option.
- Voice announcement menus
- Remote download
- Speakerphone, microphone, and associated circuitry have been removed.
- Headset mode
- Handset transmitter circuit modified so the handset microphone is electrically disabled when the phone is idle.
- Operating software cannot be altered in the field. The 6220T-TSG telephones must be returned to the factory for reconfiguration and download.

**6. OPERATIONAL ARCHITECTURE.** The Generic Switching Center Requirements (GSCR) Defense Switched Network (DSN) architecture in figure 2-1 depicts the relationship of the SUT to the DSN switches.



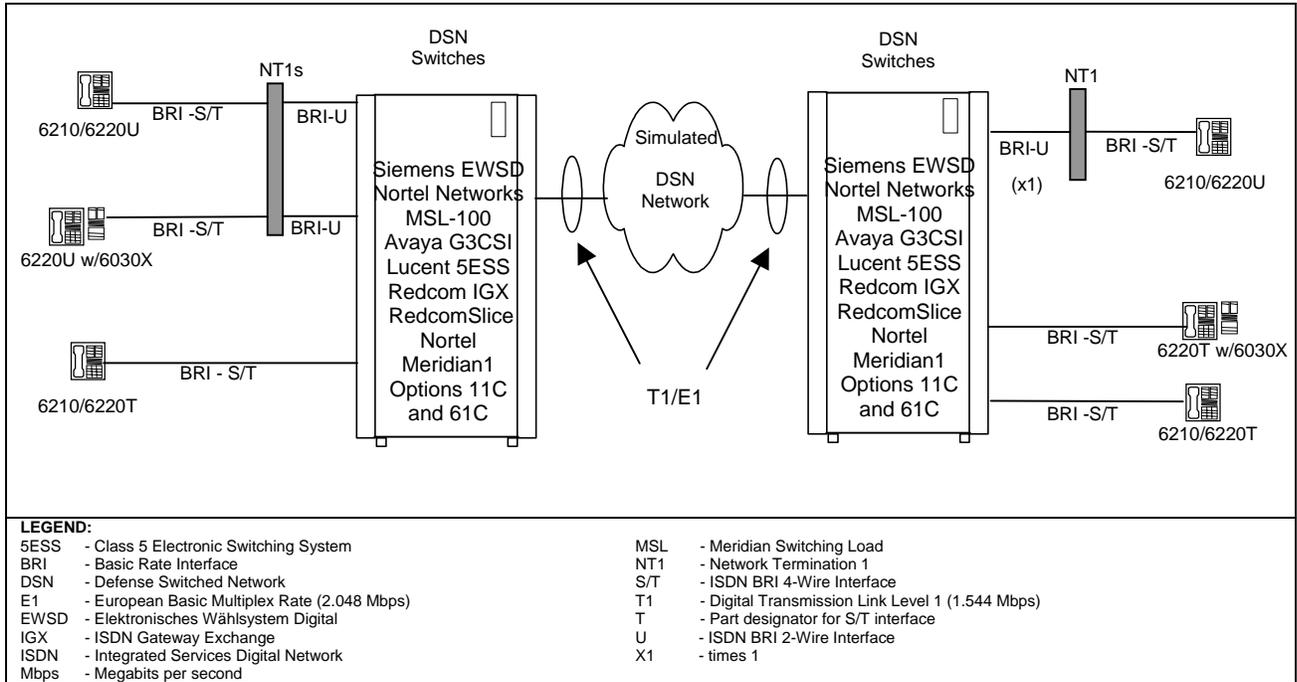
**Figure 2-1. DSN Architecture**

**7. REQUIRED SYSTEM INTERFACES.** Requirements specific to the SUT and interoperability results are listed in table 2-1. These requirements are derived from the GSCR, appendix 7, Interface and Functional Requirements and verified through JITC testing and review of vendor's Letter(s) of Compliance.

**Table 2-1. SUT Functional Requirements and Interoperability Status**

Telephone	Interface	Critical	Certified	Functional Requirements	Status	Reference
6210T	ISDN BRI NI2 S/T	Yes	Yes	MLPP in accordance with GSCR Section 3 (C)	Met	A7.5
				BRI S/T interface in accordance with ANSI T1.605-1991 (R)	Met	A7.5.3
				ISDN NI 1/2 compatible in accordance with GSCR 2.3.3(R)	Met	A7.5.4
				FCC Part 68 and Part 15 compliance	Met	A7.5
				MLPP Precedence Call Alerting (R)	Met	A7.5
6210U	ISDN BRI NI2 U	Yes	Yes	MLPP in accordance with GSCR Section 3 (C)	Met	A7.5
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6220T	ISDN BRI NI2 S/T	Yes	Yes	MLPP in accordance with GSCR Section 3 (C)	Met	A7.5
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				BRI U interface in accordance with ANSI T1.601-1999 (R)	Met	A7.5.2
				ISDN NI 1/2 compatible in accordance with GSCR 2.3.3(R)	Met	A7.5.4
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6220T-TSG	ISDN BRI NI2 S/T	Yes	Yes	MLPP in accordance with GSCR Section 3 (C)	Met	A7.5
				BRI S/T interface in accordance with ANSI T1.605-1991 (R)	Met	A7.5.3
				ISDN NI 1/2 compatible in accordance with GSCR 2.3.3(R)	Met	A7.5.4
				FCC Part 68 and Part 15 compliance	Met	A7.5
				MLPP Precedence Call Alerting (R)	Met	A7.5
<b>LEGEND:</b>						
A	- GSCR Appendix	R	- Required			
ANSI	- American National Standards Institute	S/T	- 4-Wire ISDN BRI interface			
BRI	- Basic Rate Interface	SUT	- Systems Under Test			
C	- Conditional	T1.601	- ISDN Basic Access Interface for Use on Metallic Loops for Application at the Network Side of Network Termination, Layer 1 Specification			
FCC	- Federal Communication Commission	T1.605	- ISDN Basic Access Interface for S/T Reference Points and Layer 1 Specification			
GSCR	- Generic Switching Center Requirements	T	- Part designator for S/T interface			
ISDN	- Integrated Services Digital Network	TSG	- Telephone Secure Group			
MLPP	- Multi-Level Precedence and Preemption	U	- 2-Wire ISDN BRI interface			
NI 1/2	- National ISDN 1 or 2					
NI2	- National ISDN 2					

**8. TEST NETWORK DESCRIPTION.** The SUT was tested at JITC's Global Information Grid Network Test Facility (GNTF) in a manner and configuration similar to that of its DSN operational environment. Testing the system's required functions and features was conducted using the test configuration depicted in figure 2-2.



**Figure 2-2. Test Configuration**

**9. SYSTEM CONFIGURATIONS.** Table 2-2 provides the system configurations used in the test.

**Table 2-2. Tested System Configurations**

System Name		Hardware/Software Release
Siemens EWSD (MFS, EO, SMEO, PBX 1, PBX 2)		19d with Patch Set 44
Nortel Networks MSL-100 (MFS, EO, SMEO, PBX 1, PBX 2)		SE06
Lucent 5ESS (MFS, EO, SMEO, PBX 1, PBX 2)		5E16.2 SU 05-0005
Avaya G3CSI		CM 3.0 (R013x.00.0.340.5)
REDCOM Slice (PBX 1, PBX 2)		1.0A R1P3, Compile Date 28 June 2005
Redcom IGX (SMEO, PBX 1, PBX 2)		6.1A R1P3
Nortel Networks Option 61C (SMEO, PBX 1, PBX 2)		Succession 3.0
Nortel Networks Option 11C (PBX 1, PBX 2)		Succession 3.0
SUT	6210U and 6210T	01.06.12
	6220U and 6220T	01.06.12
	6220T TSG	01.06.12
	6030X Expansion Module	01.01.03
<b>LEGEND:</b> 5ESS - Class 5 Electronic Switching System EO - End Office EWSD - Elektronisches Wählsystem Digital IGX - ISDN Gateway Exchange ISDN - Integrated Services Digital Network MFS - Multifunction Switch MSL - Meridian Switching Load PBX 1 - Private Branch Exchange 1 PBX 2 - Private Branch Exchange 2 SE - Succession Enterprise SMEO - Small End Office SU - Software Update SUT - System Under Test T - Part designator for S/T interface TSG - Telephone Secure Group U - 2-wire BRI Interface		

**10. TEST LIMITATIONS.** None.

**11. TEST RESULTS**

**a. Discussion.** The SUTs were connected and parameter downloads performed between various DSN switches. A parameter download must be performed when the telephone terminal initializes with a new Service Profile Identifier, when requested by the network due to line configuration changes, or manually configuration setting required at the switch and telephone for compatibility. The SUTs were tested in the following configurations:

- Single Line Appearance
- Multiple Line Appearance (same Directory Number (DN), same instrument)
- Multiple Appearance Directory Numbers (same DN shared by multiple instruments). Note: This was tested with the switches listed in table 2-2. However, the Nortel Networks MSL-100 and Lucent 5ESS switches do not support Multi-Level Precedence and Preemption (MLPP) interaction with Multiple Appearance Directory Numbers therefore this configuration is not covered under this certification. MLPP interaction is only supported in a non-shared directory number (s) configuration

The following features and functions were tested both intra- and inter-switch using the test diagram depicted in figure 2-2:

- MLPP in accordance with the GSCR, section 3.
- Three-way calling
- Call transfer
- Call hold

**b. Test Configurations.** The SUT configurations as they relate to the specific DSN switches can be found on the Telecom Switched Services Interoperability (TSSI) website at <http://jitic.fhu.disa.mil/tssi>.

**c. Test Summary.** The SUT met the critical interoperability requirements for Customer Premise Equipment for the interfaces depicted in table 2-1, as set forth in reference (c), and is certified for joint use within the DSN.

**12. TEST AND ANALYSIS REPORT.** No detailed test report was developed, in accordance with the Program Manager's request. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) system, which uses Unclassified-But-Sensitive Internet Protocol Router Network (NIPRNet) e-mail. More comprehensive interoperability status information is available via the JITC System Tracking Program (STP). The STP is accessible by .mil/gov users on the NIPRNet at <https://stp.fhu.disa.mil>. Test reports, lessons learned, and related testing documents and references are on the JITC Joint Interoperability Tool (JIT) at <http://jit.fhu.disa.mil> (NIPRNet), or <http://199.208.204.125> (SIPRNet). Information related to DSN testing is on the TSSI website at <http://jitic.fhu.disa.mil/tssi>.