



**DEFENSE INFORMATION SYSTEMS AGENCY**  
JOINT INTEROPERABILITY TEST COMMAND  
2001 BRAINARD ROAD  
FORT HUACHUCA, ARIZONA 85613-7051

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

**MEMORANDUM FOR DISTRIBUTION**

**SUBJECT:** Joint Interoperability Test Certification of the Compunetix CONTEX ® 240 and 480 Audioconferencing Bridges with Software Release 1.836.d

- References:**
- (a) DOD Directive 4630.5, "Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)," 11 January 2002
  - (b) CJCSI 6212.01C, "Interoperability and Supportability of National Security Systems and Information Technology Systems," 20 November 2003

1. References (a) and (b) establish the Defense Information Systems Agency, Joint Interoperability Test Command (JITC), as the responsible organization for interoperability test certification. Additional references are provided in enclosure 1.
2. The Compunetix CONTEX ® 240 Audioconferencing Bridge with Software Release 1.836.d, hereinafter referred to as the System Under Test (SUT), meets all of the critical interoperability requirements and is certified for joint use within the Defense Switched Network (DSN). The SUT was the system tested at JITC. It employs the same software and trunk/line card hardware as the CONTEX ® 480 Audioconferencing Bridge. JITC analysis determined the CONTEX ® 480 Audioconferencing Bridge to be functionally identical to the SUT for interoperability certification purposes. The SUT and CONTEX ® 480 Audioconferencing Bridges with Software Release 1.836.d meet all of the critical interoperability requirements and are certified for joint use within the DSN. Critical interoperability requirements are set forth in reference (c) and testing was conducted using test procedures derived from reference (d). Reference (c) requires that the preset conference functional requirements be met with either an internal or external conference bridge. The external conference bridge interface can be one of the following interfaces: Integrated Services Digital Network Primary Rate Interface, Channel Associated Signaling (CAS) T1, or CAS E1. The SUT meets the interoperability certification functional requirements via a CAS T1. 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 from 9 through 12 December 2003 by the JITC at the Network Engineering and Integration Lab, Fort Huachuca, AZ. The Certification Testing Summary (enclosure 2) documents the test results and describes the test

network. 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 status of each is indicated in table 1.

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

Interface/Signaling	Critical	Certified	Critical Functional Requirements	Met	GSCR Paragraph
T1 CAS (B8ZS/ESF, AMI/SF) DTMF Signaling	Yes <sup>1</sup>	Yes	Preset Conferencing	Yes	2.6
			Conference Notification Record Announcement	Yes	2.6.1
			Conference Precedence Level	Yes	3.8.7.1
			Automatic Retrial and Alternate Address	Yes	2.6.2
			Bridge Release	Yes	2.6.3
			Lost Connection to Conferee or Originator	Yes	2.6.4
			Secondary Conferencing	Yes	2.6.5
			Address Translation	Yes	2.6.6
<b>Legend:</b>					
AMI - Alternate Mark Inversion					
B8ZS - Bipolar Eight Zero Substitution					
CAS - Channel Associated Signaling					
DTMF - Dual Tone Multi-Frequency					
E1 - European Basic Rate (2.048 Mbps)					
ESF - Extended Superframe					
FR - Functional Requirement					
GSCR - Generic Switching Center Requirements					
Mbps - Megabits per second					
SF - Superframe					
SUT - System Under Test					
T1 - Digital Transmission Link level 1 (1.544 Mbps)					
<b>Note:</b>					
<sup>1</sup> Per reference (c), the SUT can meet the external bridge requirements via one of the following interfaces: Integrated Services Digital Network Primary Rate Interface, CAS T1, or CAS E1. The SUT meets the critical interoperability FRs via a CAS T1 interface. Since CAS T1 is the only interface supported by this conference bridge, it is a critical interface.					

5. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) system, which uses unclassified (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, Networks and Transport Division (JTE), Joint Interoperability Test Certification of the Compunetix CONTEX ® 240 and 480 Audioconferencing Bridges with Software Release 1.836.d

6. The JITC point of contact is Mr. John Hooper, DSN 879-5041 or commercial (520) 538-5041. The e-mail address is [hooperj@fhu.disa.mil](mailto:hooperj@fhu.disa.mil).

FOR THE COMMANDER:

2 Enclosures:	LESLIE CLAUDIO
1 Additional References	Chief
2 Certification Testing Summary	Networks and Transport Division

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Commander, Defense Information Systems Agency (DISA), ATTN: NS53 (Mr. Osman), Room 5w23, 5275 Leesburg Pike (RTE 7) Falls Church, VA 22041

## **ADDITIONAL REFERENCES**

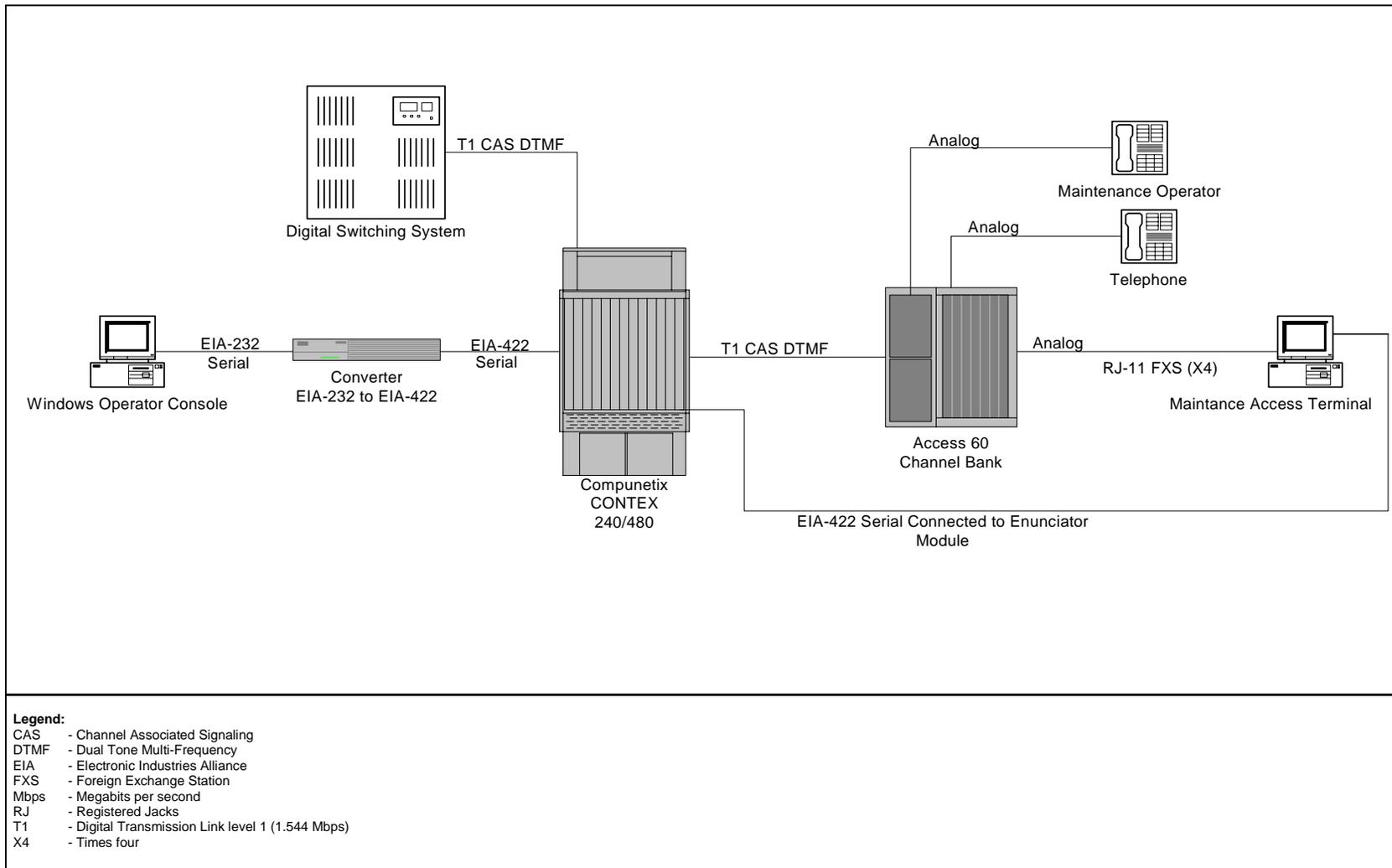
- (c) Defense Information Systems Agency (DISA), "Department of Defense Voice Networks Generic Switching Center Requirements (GSCR)," 8 September 2003
- (d) Joint Interoperability Test Command, "Defense Switched Network Generic Switch Test Plan (GSTP)," 17 June 1999

## CERTIFICATION TESTING SUMMARY

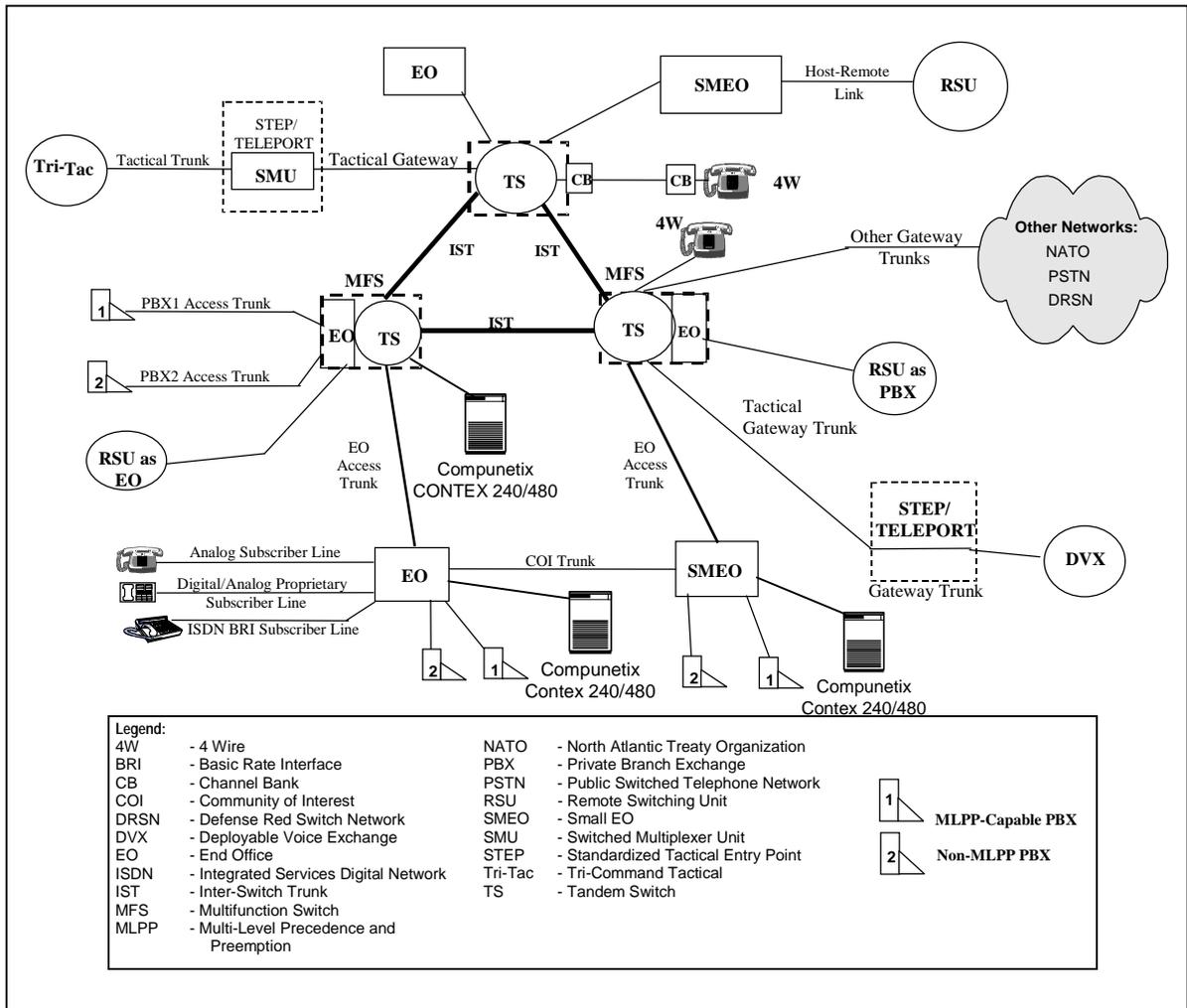
1. **SYSTEM TITLE.** The Compunetix CONTEX ® 240 Audioconferencing Bridge with Software Release 1.836.d, hereinafter referred to as System Under test (SUT).
2. **PROPONENT.** Defense Information Systems Agency (DISA).
3. **PROGRAM MANAGERS.** Mr. Howard Osman, NS53, Room 5W23, 5275 Leesburg Pike, Falls Church, VA 22041, E-mail: Osmanh@ncr.disa.mil.
4. **TESTERS.** Joint Interoperability Test Command (JITC), Ft. Huachuca, AZ.
5. **SYSTEM UNDER TEST DESCRIPTION.** The SUT was the system tested at JITC. It employs the same software and trunk/line card hardware as the CONTEX ® 480 Audioconferencing Bridge. JITC analysis determined CONTEX ® 480 Audioconferencing Bridge to be functionally identical to the SUT for interoperability certification purposes. The Compunetix CONTEX ® Audioconferencing Bridges come in two sizes that meet the minimum switch capacity for the Defense Switched Network (DSN) preset conferencing. They include the SUT, which has the capacity of 240 ports with a total of 24 digital T-1 interfaces, and the CONTEX ® 480, which has double the capacity at 480 ports with a total of 40 digital T-1 interfaces. The SUT features include:
  - Reserving, creating, controlling, and modifying conferences using touchtone commands or standard web browser over the web.
  - Automatically notifying participants of scheduling conferences through e-mail or fax.
  - Digitally recording conferences for a later playback, streaming, or CD-ROM distribution.

The SUT's component configuration is shown in figure 2-1.

6. **OPERATIONAL ARCHITECTURE.** The deployment of the SUT is shown in figure 2-2 which depicts the Generic Switching Center Requirement (GSCR) DSN operational architecture. Upon certification, the SUT can be deployed in the DSN with Multifunction, End Office, or Small End Office switches.
7. **REQUIRED SYSTEM INTERFACES.** Reference (c) requires that the preset conference functional requirements (FRs) be met with either an internal or external conference bridge. The external conference bridge interface can be met with one of the following interfaces: Integrated Services Digital Network Primary Rate Interface, Channel Associated Signaling (CAS) T1, or CAS E1. The SUT meets the critical interoperability FRs via a CAS T1. The FRs and Interoperability statuses are indicated in table 2-1.



**Figure 2-1. Compunetix CONTEX® 240 and 480 Audioconferencing Bridges Component Configuration**



**Figure 2-2. DSN Architecture**

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

Interface/Signaling	Critical	Certified	Critical Functional Requirements	Met	GSCR Paragraph
T1 CAS (B8ZS/ESF, AMI/SF) DTMF Signaling	Yes <sup>1</sup>	Yes	Preset Conferencing	Yes	2.6
			Conference Notification Recorded Announcement	Yes	2.6.1
			Conference Precedence Level	Yes	3.8.7.1
			Automatic Retrial and Alternate Address	Yes	2.6.2
			Bridge Release	Yes	2.6.3
			Lost Connection to Conferee or Originator	Yes	2.6.4
			Secondary Conferencing	Yes	2.6.5
			Address Translation	Yes	2.6.6
<b>Legend:</b>					
AMI - Alternate Mark Inversion B8ZS - Bipolar Eight Zero Substitution CAS - Channel Associated Signaling DTMF - Dual Tone Multi-Frequency E1 - European Basic Rate (2.048 Mbps) ESF - Extended Superframe FR - Functional Requirement GSCR - Generic Switching Center Requirements Mbps - Megabits per second SF - Superframe SUT - System Under Test T1 - Digital Transmission Link level 1 (1.544 Mbps)					
<b>Note:</b>					
1 Per reference (c), the SUT can meet the external bridge requirements via one of the following interfaces: Integrated Services Digital Network Primary Rate Interface, CAS T1, or CAS E1. The SUT meets the critical interoperability FRs via a CAS T1 interface. Since CAS T1 is the only interface supported by this conference bridge, it is a critical interface.					

**8. TEST NETWORK DESCRIPTION.** The SUT was tested at JITC's Network Engineering and Integration Laboratory in a manner and configuration similar to that of the DSN operational environment. Testing of the system's required functions and features was conducted using the test configuration depicted in figure 2-3.

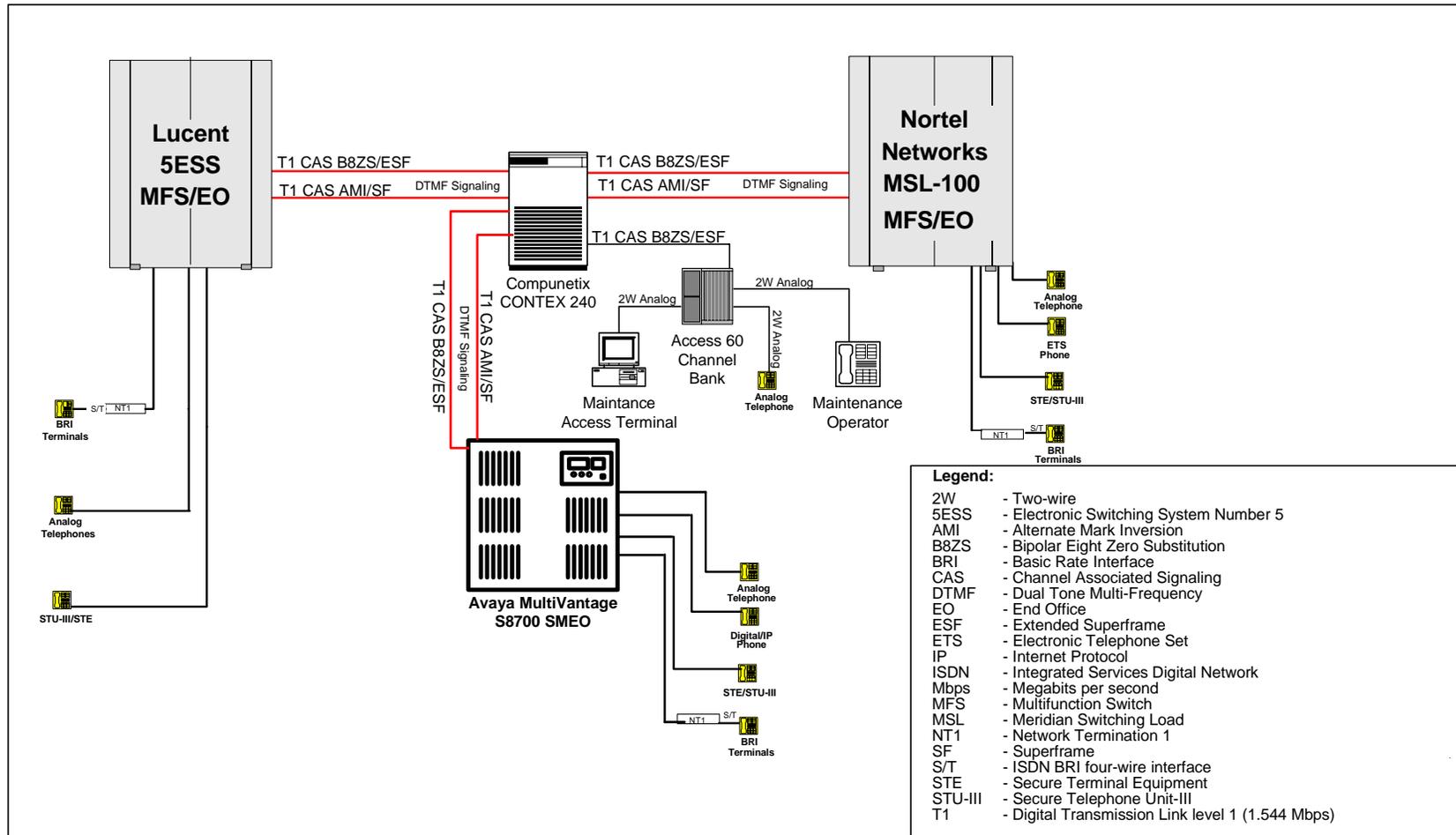


Figure 2-3. Test Configuration

**9. SYSTEM CONFIGURATIONS.** Table 2-2 provides the system configurations and their respective software used in the test.

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

System Name	Hardware/Software Release
Nortel Networks MSL-100	SE0 6
Compunetix CONTEX® 240 Audioconferencing Bridges	MAT- 1.836.d
	WOC - 2.535.7c
	Conference Module - 1.261
	Serial In/Out - SIO2.100
	Processor Memory Module - PMM4.280T
	Line Interface (364 Module) -T1R43580.ABS
	Enunciator (370 Module) - AEM1.205
	Access 60 Channel Bank – E3, Serial # 00000001h
Lucent 5ESS	5E16.2
Avaya MultiVantage S8700	R012IX.00.0.213.0
<b>Legend:</b>	
5ESS - Class 5 Electronic Switching System	PMM - Processor Memory Module
MAT - Maintenance Access Terminal	SE - Seccession Enterprise
MSL - Meridian Switching Load	SIO - Serial Input/Output
	WOC - Windows Operator Console

**10. TEST LIMITATIONS.** None.

## 11. TEST RESULTS

### a. Discussion

**(1) Preset Conference (GSCR Paragraph 2.6).** The SUT meets the following FRs for switch capacity minimum requirements:

- Ten separate bridges with each bridge having the capacity for one originator and 20 conferees.
- The capability to function as the “Primary” or “Secondary” or “Alternate” bridge that will interconnect to other bridges that support up to a maximum of 191 conferees using all ten bridges off the same switch for the same conference.
- Preset Conference (abbreviated pool of subscribers/bridges) assignment of abbreviated numbers not greater than 20 switch address numbers per bridge. Such an address number being a combination of subscriber lines and other conference bridge accesses.
- Preset conference network(s) that require more than 20 conferees uses the cascading bridge method of expanding the number of conferees beyond 20 conferees.
- Each preset conference bridge is capable of Multi-Level Precedence and Preemption (MLPP) access control and is fully interoperable with the serving switch to permit full MLPP access and control.
- When a conferee’s telephone is not answered, an automatic disconnect takes place within an adjustable interval of 15 to 60 seconds after a bridge leg is first connected to the conferee line.

- Originators of the preset conference have the capability of adding up to five non-programmed conferees (within the 21 conferees capability) to the conference by sequentially keying each add-on address and connecting the conferee to the bridge.

**(2) Conference Notification Recorded Announcement (GSCR Paragraph 2.6.1).** The SUT meets the following FRs for Origination and Recordings:

- Each bridge generates a notification recording that is audible only to those conferees on that bridge.
- When all conferees on a bridge have answered, the conference notification recording is removed automatically from the bridge two seconds after the last conferee answers.
- When the conference notification recording is removed automatically from a bridge, the notification recording from the adjacent bridge, if continuing, then becomes audible to the originator and to the conferees on the remaining bridge(s).
- When a conferee disconnects, a conference disconnect tone is sent to the originator and other conferees in the conference.

**(3) Conference Precedence Level (GSCR paragraph 3.8.7.1).** The SUT meets the following FRs for Conference Precedence Level:

- When a preset conference is initiated, an idle bridge in the desired conference group is seized and the conference connections attempted.
- When all conference bridges are busy, ROUTINE conference call attempts are connected to "Line Busy" tone and the call attempts at precedence levels above ROUTINE reexamine all conference bridges on a preemptive basis.
- When all conference bridges are busy at the lowest level of precedence, the lower precedence bridge is preempted for a higher precedence conference call.
- When a conference bridge is preempted, a two-second burst of preempt tone is provided to the conferees on the existing conference. The existing connections to the bridge are dropped and the bridge automatically sends an on-hook signal to the associated switch ports to permit the new connections to be established.
- When the requested precedence level is equal to or lower than, that of the existing conference, the connection is denied and the caller is provided a Blocked Precedence Announcement.

**(4) Automatic Retrial and Alternate Address (GSCR paragraph 2.6.2).** The SUT meets the following FRs for Automatic Retrial and Alternate Address:

- Off-hook supervision is returned to the originator from each bridge when all conferees have answered or when the originator has forced the conference.
- If answer supervision is not returned from any conferee location within an adjustable interval of 15 to 60 seconds, one automatic retrial is made to the primary conferee address.
- Conferees are provided with alternate addresses that the SUT tries when the call fails to complete to the primary address.
- When a call to a primary address fails to complete within two trials, the call is directed to an alternate address, if provided, and two call attempts are made to the alternate address.

**(5) Bridge Release (GSCR paragraph 2.6.3).** The SUT meets the following FRs for Bridge Release:

- The primary bridge is released when on-hook supervision is received on the originating port of the primary bridge or on all of the other conference bridge ports.
- If on-hook supervision is received on the originating port of secondary or tertiary bridges, all subsequent connections and equipment are released.
- A conference bridge is released after all attempts at call completion are made and no answers are received on all ports.
- A release of conference bridges is such that it is impossible for the bridges to become locked together.

**(6) Lost Connection to Conferee or Originator (GSCR paragraph 2.6.4).** The SUT meets the following FRs for Lost Connection to Conferee or Originator:

- If the originator is lost or preempted, the bridge is held up long enough for preempt tone to be given to all conferees.
- If a connection to a conferee is lost, due to disconnection or preemption, a distinctive disconnect signal, defined as a conference disconnect tone, is provided to the conference originator and all conferees.

**(7) Secondary Conferencing (GSCR paragraph 2.6.5).** The SUT meets the following FRs for Secondary Conferencing:

- When a conference is activated and two or more of the addressees require a secondary bridge, the address is processed in the normal manner and directed toward the office serving the secondary equipment.

- The conference equipment is designed so that it may be used alternatively for primary or secondary conferences.
- Identical operational features, such as application and removal of the conference notification recorded announcement, are provided for both primary and secondary conferences.

**(8) Address Translations (GSCR paragraph 2.6.6).** The SUT meets the following FRs for Address Translations:

- Translation of the seven-digit conference address is met as follows:
  - The first three or five digits of the address are translated to identify the specific destination numbering plan area and switching center.
  - The first two digits of the four-digit line number are utilized to identify the switching center at which the conferencing equipment is located.
  - The four-digit line number is translated to indicate the particular preset conference arrangement.

**b. Test Summary.** The Compunetix CONTEX © 240 and 480 Audioconferencing Bridges with Software Release 1.836.d, when connected to the interface certified in this letter, meet the critical interoperability requirements for preset conferencing and are certified for joint use in the DSN, in accordance with the requirements set forth in reference (c).

**12. TEST AND ANALYSIS REPORT.** JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) system, which uses unclassified (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>.