INTEROFFICE MEMORANDUM

TO: WEY

FROM: WEY1

DATE: 08 August 1997

SUBJECT: Standard Operating Procedures Manual For the Black Box KVM ServSwitch

Reference: Isolation Test of Black Box SW721A-R2 ServSwitch. 01 May 1997.

Preparer: LT Ferdinand A. Leland/WEY1/697-6611/fal

1. A requirement has been identified to be able to share a keyboard, mouse and monitor between multiple PCs with different classification. To accomplish this, a Black Box KVM ServSwitch will switch a monitor, keyboard, and mouse between the different PCs.

2. Per reference, the Black Box KVM ServSwitch passed the NSTISSAM TEMPEST/1-91 level I requirements and is approved to be used for switching between two different PCs with different classifications so long as the PC's meet local TEMPEST/RED-BLACK requirements.

3. Enclosed is the Standard Operating Procedure (SOP) that must be followed when using the Black Box KVM ServSwitch. The SOP identifies the procedures to be followed when turning on, switching between, and shutting down the different PCs connected to the Black Box KVM ServSwitch.

4. Any problems identified with the enclosed SOP please contact my POC, LT Leland. He can be reached at 703-697-6611.

GLENN M. JONES
Chief, Joint Systems Security Division

1 ENCLOSURE
1 Black Box Inc. KVM ServSwitch Standard Procedures Manual

EXECUTIVE SUMMARY

The TASC Information Systems Security (INFOSEC) department was tasked by the Community Open Source Program Office (COSPO) to perform an assessment of the Black Box's 4 port model SW722 ServSwitch. The specific tasking was to determine the degree of signal isolation performance of the four port SW722 ServSwitch relative to that of the 2 port SW721 ServSwitch model, which was performed in May of 1994 by the Office of Security (Reference: Title: Security Evaluation of the KVM 2 to 1 ServSwitch, an unclassified report produced by the Office of Security of the Information Security Technical Evaluation Center). The motivation behind this request was to determine the suitability of the four port ServSwitch to permit more than two CPUs at varying security level to be connected by the ServSwitch while sharing the same monitor, keyboard and mouse, without allowing signal "leakage" to other security levels.

Two phases of testing were conducted in TASC's Radio Frequency (RF) Systems Laboratory. The objective of this testing was to establish the degree of signal isolation of the four port ServSwitch relative to the specification established by the Office of Security in the two port ServSwitch evaluation, that is signal leakage greater than or equal to 45 dB below the level of the injected signal. The first phase tested the ServSwitch while connected to an operational CPU and looked for the magnitude of signal leakage present on the other CPU ports. The second phase consisted of injecting a known test signal and then evaluating the degree of signal leakage present. The highest amount of signal leakage during the two test phases on any of the pins of the four port ServSwitch was 62 dB below the test signal, which clearly exceeded the 45 dB below the test signal specification. This testing proved that the amount of signal isolation provided by the four port SW722 ServSwitch was equal to or better than the signal isolation present in the two port SW721 ServSwitch. The recommendation is that COSPO's current plan to use the four port ServSwitch to provide additional switched connectivity to users at more than two security domains, while sharing a mouse, monitor and keyboard, can be done with minimal risk of signal leakage.

4. CONCLUSION

The testing results on this four port KVM SW722 ServSwitch evaluation closely correlate with the earlier May 1994 findings on the two port KVM SW721 ServSwitch. In both cases, signal leakage observed was minimal, and clearly exceeded the 45 dB below the test signal specification. The highest amount of signal leakage observed on any of the pins of the four port ServSwitch was 62 dB below the test signal. To place this figure in perspective, this means that out of the injected 5 Volt square wave test signal, the highest amount of leakage observed on any of the other pins was in the millivolt range (under 0.004 Volts). The majority of pins exhibited signal leakage in the microvolt range (less than 0.001 Volts). This testing proved that the amount of signal isolation provided by the four port SW722 ServSwitch was equal to or better than the signal isolation present in the two port SW721 ServSwitch. These testing results along with the vendor's motivation in the ServSwitch design to provide sufficient signal isolation to preclude functional difficulties in the shared components, provides a high level of confidence that the possibilities of signal leakage above the 45 dB specification are minimal. The recommendation is that COSPO's current plan to use the four port ServSwitch to provide additional switched connectivity to users at more than two security domains, while sharing a mouse, monitor and keyboard, can be done with minimal risk of signal leakage.