



## DEFENSE INFORMATION SYSTEMS AGENCY

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IN REPLY  
REFER TO:

Joint Interoperability Test Command (JTE)

**18 Nov 11**

### MEMORANDUM FOR DISTRIBUTION

**SUBJECT:** Extension of the Special Interoperability Test Certification of the Fujitsu  
FLASHWAVE 7500 Optical Transport System with Software Release 6.1.2

- References:**
- (a) Department of Defense Directive 4630.05, "Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)," 5 May 2004
  - (b) Chairman, Joint Chiefs of Staff Instruction 6212.01E, "Interoperability and Supportability of Information Technology and National Security Systems," 15 December 2008
  - (c) through (f) see enclosure 1

1. References (a) and (b) establish the Joint Interoperability Test Command (JITC) as the responsible organization for Interoperability Certification.
2. The following Fujitsu hardware and software items will hereinafter be referred to as the System Under Test (SUT).
  - a. FLASHWAVE 7500 Two-Degree Reconfigurable Optical Add-Drop Multiplexer (ROADM) 40-Channel Software Release 6.1.2.
  - b. FLASHWAVE 7500 Two-Degree Wavelength Selective Switch ROADM 40-Channel Software Release 6.1.2.
  - c. FLASHWAVE 7500 Fixed Optical Add-Drop Multiplexer and or ROADM 40-Channel Software Release 6.1.2.
  - d. Multi-degree Hub node scalable in-service to a 12-degree hub configuration 40-Channel Software Release 6.1.2.

The SUT is certified for joint use in the Defense Information System Network (DISN) as an Optical Transport System (OTS). The Defense Information Systems Agency (DISA) adjudicated all Test Discrepancy Reports (TDR) open at the completion of testing to have a minor operational impact. JITC will verify the certification status of the SUT by evaluating any new discrepancies noted in the operational environment for impact on the existing certification. These discrepancies will be adjudicated to the satisfaction of DISA via a vendor Plan of Actions and Milestones that will address all new critical TDRs within 120 days of identification. JITC conducted Testing using OTS product requirements derived from the Unified Capabilities Requirements (UCR), Reference (c). The SUT includes additional models and capabilities not

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covered by this certification. No other configurations, features, or functions, except those cited in this memorandum, are certified by JITC. This certification expires upon changes that affect interoperability, but no later than three years from the date of the original memorandum.

3. The extension of this certification is based upon Desktop Review (DTR)-4. JITC conducted interoperability testing at the JITC Advanced Technology Test Facility, Indian Head, Maryland during August and September 2009. Review of the vendor’s LoC was completed during July 2009 reference (e). A review of the current changes in the SUT in Reference (d) and comparison with the new requirements in Reference (c) was conducted in July 2010 to certify the SUT for interoperability within the DISN without additional interoperability testing. DSAWG granted accreditation on 14 June 2010 based on the security testing completed by DISA-led IA test teams and published in a separate report, Reference (f). The original certification specified the expiration date three years from date of issue; therefore, this certification is also based on the IA accreditation, which is limited to three years. This DTR-4 was requested to include five new function units in the tested system equipment list in the original certification letter, (see Table-3). JITC determined, through the analysis, that there is no risk in approving this DTR-4 because these five omitted units were included in original SUT configuration, but omitted from the equipment list in the original letter because they were not significant to the certification effort. In addition, this change is unlikely to affect the interoperability functionality of the certified OTS. Therefore, JITC approves this DTR-4. The DSAWG accreditation for this DTR-4 was not required because this DTR-4 is relevant only to interoperability certification.

4. The interface, Capability Requirements (CR), Functional Requirements (FR), and component status of the SUT are listed in Tables 1 and 2. JITC evaluated the interoperability status of the SUT based on the corresponding applicable threshold of CRs/FRs in UCR 2008 Change 1, Section 5.5.3.

**Table 1. SUT Interface Interoperability Status**

Interface	Critical	UCR Reference	Threshold CR/FR Requirements	Status	Remarks
OC-48/STM-16	Yes	5.5.3.2.5.1	1, 2, 4, 5, 6, and 8	Certified	Met threshold CRs/FRs for OC-48 but not for STM-16 (See note 1).
OC-192/STM-64	Yes	5.5.3.2.5.1	1, 2, 3, 4, 5, 6, and 8	Certified	Met threshold CRs/FRs for OC-192/STM-64.
OC-768/STM-256	Yes	5.5.3.2.5.1	1, 2, 3, 4, 5, 6, and 8	Certified	Met threshold CRs/FRs for OC-768/STM-256.
1 Gigabit Ethernet	Yes	5.5.3.2.5.1	1, 2, 4, 5, and 8	Certified	Met threshold CRs/FRs.
10 Gigabit Ethernet LAN	Yes	5.5.3.2.5.1	1, 2, 4, 5, 6, and 8	Certified	Met threshold CRs/FRs.
10 Gigabit Ethernet-WAN	Yes	5.5.3.2.5.1	1, 2, 4, 5, 6, and 8	Certified	Met threshold CRs/FRs.
OTN ODU1/ODU2/ODU3	Yes	5.5.3.2.5.1	1, 2, 4, 5, 6, and 8	Certified	Met requirement based on vendor’s LoC (See note 2).

**Table 1. SUT Interface Interoperability Status (continued)**

Interface	Critical	UCR Reference	Threshold CR/FR Requirements	Status	Remarks
OTN 100 Gbps	Yes	5.5.3.2.5.1	7	Not-Certified	SUT does not support OTN 100 Gbps (See note 3).
OSC	Yes	5.5.3.2.8	8	Certified	Met threshold CRs/FRs.

**NOTES:**

- The SUT does not support STM-16. The Program Manager adjudicated this test discrepancy as having a minor operational impact because the current fielding does not implement STM-16 interface.
- Based on vendor's LoC, the SUT meets the corresponding UCR requirements. JITC did not test the OTN rates including ODU1/ODU2/ODU3 (See Enclosure 2 test limitations for more details).
- The SUT does not support 100 Gbps. The Program Manager adjudicated this test discrepancy as having a minor operational impact because the current fielding does not implement 100 Gbps interface.

**LEGEND:**

CR	Capability Requirements	OSC	Optical Supervisory Channel
FR	Functional Requirement	OTN	Optical Transport Network
Gbps	Gigabits per second	STM	Synchronous Transport Module
JITC	Joint Interoperability Test Command	SUT	System Under Test
LAN	Local Area Network	UCR	Unified Capabilities Requirements
LoC	Letters of Compliance	WAN	Wide Area Network
OC	Optical Carrier		
ODU	Optical Channel Data Unit		

**Table 2. SUT Capability Requirements and Functional Requirements Status**

CR/FR ID	Capability/Function	Applicability (See note 1.)	UCR Reference	Status	Remarks
1	<b>Requirements Applicable to all OTS Elements</b>				
	Overall Requirements	Required	5.5.3.2.2.1	Partially Met	See note 2.
	Performance Requirements	Required	5.5.3.2.2.2	Met	
	Reliability and Quality Assurance	Required	5.5.3.2.2.2.1	Met	
	Common Physical Design Requirements	Required	5.5.3.2.2.3	Met	
2	Protection and Restoration	Required	5.5.3.2.2.4	Partially Met	See note 3.
	<b>Optical Amplifier Requirements</b>				
3	OLA Physical Design Requirements	Required	5.5.3.2.3.1	Met	
	<b>Muxponder Requirements</b>				
4	Muxponder	Required	5.5.3.2.4	Met	
	<b>Transponder Requirements</b>				
5	Transponder	Required	5.5.3.2.5	Met	
	Interface Requirements	Required	5.5.3.2.5.1	Partially Met	See notes 4 and 5.
6	<b>ROADM Requirements</b>				
	ROADM Requirements	Required	5.5.3.2.6	Met	
7	ROADM Specific Physical Design Requirements	Required	5.5.3.2.6.1	Met	
	<b>Requirements Common to Transponder and ROADM</b>				
8	Framed Formats	Required	5.5.3.2.7.1	Met	
	Unframed Formats	Required	5.5.3.2.7.2	Met	
9	<b>Optical Supervisory Channel Requirements</b>				
	Optical Supervisory Channel	Required	5.5.3.2.8	Met	
10	<b>OTS Standards Compliance Requirements</b>				
	OTS Standards Compliance	Required	5.5.3.2.9	Met	

**Table 2. SUT Capability Requirements and Functional Requirements Status (continued)**

<b>NOTES:</b>	
1. Annotation of 'required' refers to high-level requirement category. Applicability of each sub-requirement is provided in enclosure 2.	
2. The SUT only supports 40 wavelengths not the 80 wavelengths specified by the UCR. The Program Manager adjudicated this test discrepancy as having a minor operational impact because the current fielding does not implement 80 wavelengths.	
3. Quad 10 Gigabit Module QMC1, 40 Gigabit Regen Module QRC1, and 10 Gigabit Regen Module RGC1 did not meet the 50-millisecond switch time requirement. The Program Manager adjudicated this test discrepancy as having a minor operational impact because the current fielding does not implement any 40 Gigabit configurations.	
4. The SUT does not supports STM-16 and 100 Gigabit interface. The Program Manager adjudicated this test discrepancy as having a minor operational impact because the current fielding does not implement STM-16 and 100 Gigabit interface.	
5. The SUT met all the UCR OTN interface requirements based on vendor's LoC.	
<b>LEGEND:</b>	
CR	Capability Requirements
FR	Functional Requirement
ID	Identification
LoC	Letter of Compliance
OLA	Optical Line Amplifier
OTN	Optical Transport Network
OTS	Optical Transport System
ROADM	Reconfigurable Optical Add-Drop Multiplexer
STM	Synchronous Transport Module
SUT	System Under Test
UCR	Unified Capabilities Requirements

**Table 3. List of Detailed Changes for DTR-4**

Certified FNC Part Number	Description	DTR FNC Part Number	Description	Reason for Change	Description of Change
FC95700021	OC-3 IR-1 SFP	FC95700020	OC-3 IR-1 SFP	Certify the FC95700020 unit for use in the FLASHWAVE 7500 network element.	The FC95700020 is comparable to the FC95700021 that was tested and approved in Release 6.1.2 of the NE. Both of these units are OC-3 Intermediate Reach SFPs with the same optical specifications. Additionally, Fujitsu is consolidating all SFPs to "common SFPs" so that they can be supported across all products. This comparable unit is one of these common SFPs.
FC95700051	OC-12 IR-1 SFP	FC95700050	OC-12 IR-1 SFP	Certify the FC95700050 unit for use in the FLASHWAVE 7500 network element.	The FC95700050 is comparable to the FC95700051 that was tested and approved in Release 6.1.2 of the NE. Both of these units are OC-12 Intermediate Reach SFPs with the same optical specifications. Additionally, Fujitsu is consolidating all SFPs to "common SFPs" so that they can be supported across all products. This comparable unit is one of these common SFPs.
FC95700080	OC48 SR-1 SFP	FC95700160	OC-48 Multi-rate SR-1 SFP	Certify the FC95700160 unit for use in the FLASHWAVE 7500 network element.	The FC95700160 is comparable to the FC95700080 that was tested and approved in Release 6.1.2 of the NE. Both of these units are OC-48 Long Reach-2 SFPs with the same optical specifications. They only differ in that the FC95700160 is a multi-rate SFP, while the FC95700080 is a fixed-rate SFP. Additionally, Fujitsu is consolidating all SFPs to "common SFPs" so that they can be supported across all products. This comparable unit is one of these common SFPs.
FC95705010	1000Base-LX SFP	FC95705200	1000Base-LX SFP	Certify the FC95705200 unit for use in the FLASHWAVE 7500 network element.	The FC95705200 is comparable to the FC95705010 that was tested and approved in Release 6.1.2 of the NE. Both of these units are 1000Base-LX SFPs with the same optical specifications. Fujitsu is consolidating the SFPs to common SFPs so that they can be supported across all products.

**Table 3. List of Detailed Changes for DTR-4 (continued)**

Certified FNC Part Number	Description	DTR FNC Part Number	Description	Reason for Change	Description of Change
PL-EUR7500-R0612	SHP3 Shelf processor unit with R6.1.2 software	P7500SHP3R0612A	SHP3 Shelf processor unit with R6.1.2 software	Certify P7500SHP3R0612A part number for use in the FLASHWAVE 7500 network element.	These are the exact same unit. Fujitsu will be moving to this new P7500SHP3R0612A part number in the future, so this DTR-4 is to make sure it is included in this JITC certification.

5. In accordance with the Program Manager’s request, JITC did not develop a detailed test report. JITC distributes interoperability information via the JITC Electronic Report Distribution system, which uses Non-secure Internet Protocol Router Network (NIPRNet) e-mail. More comprehensive interoperability status information is available via the JITC System Tracking Program, which .mil/gov users can access 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 at <http://jit.fhu.disa.mil> (NIPRNet). Information related to (Defense Switched Network (DSN) testing is on the Telecom Switched Services Interoperability website at <http://jitc.fhu.disa.mil/tssi>. All associated data is available on the DISA Unified Capability Coordination Office website located at <http://www.disa.mil/ucco/>.

6. The JITC testing point of contact is Mr. Son Pham, commercial (301) 744-2636, or DSN 354-2636. His e-mail address is [Son.Pham@disa.mil](mailto:Son.Pham@disa.mil). The JITC mailing address is 3341 Strauss Avenue, Suite 236, Indian Head, Maryland 20640-5149. The SUT System tracking number is TN 0915503.

FOR THE COMMANDER:



BRADLEY A. CLARK  
Chief,  
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1 Enclosure a/s

JITC Memo, JTE, Extension of the Special Interoperability Test Certification of the Fujitsu  
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## **ADDITIONAL REFERENCES**

- (c) Office of Assistant Secretary of Defense for Networks and Information Integration Document, "Department of Defense Unified Capabilities Requirements 2008, Change 1," 22 January 2010
- (d) Fujitsu Desk Top Review (DTR) Reference Document, "FLASHWAVE 7500, R6.1.2 DTR-4," March 2011
- (e) Fujitsu Document, "Letter of Compliance," July 2009
- (f) Joint Interoperability Test Command Document, "Information Assurance (IA) Assessment of Fujitsu FLASHWAVE 7500 with Software Release 6.1.2 (TN 0915503), for APL" 1 October 2009 and for DTR-4 5 October 2010

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