

REV	APPLICATION	
	NEXT ASSY	USED ON
SHT	1	
NAVSEA DRAWING NO.	6877804	

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	RELEASED AS REVISION A.	10/5/94	
B	UPDATE OF REVISION A.	4/11/95	
C	UPDATE OF REVISION B.	9/30/99	
D	UPDATE OF REVISION C.	1/09/06	
E	UPDATE OF REVISION D.	2/04/08	<i>Robert A. Brown</i>

ESWBS
499

LIST OF REFERENCES

REF NO.	DOCUMENT NUMBER	REV	DOCUMENT TITLE
1	MIL-STD-2042-6	A	FIBER OPTIC TOPOLOGY INSTALLATION STANDARD METHODS FOR NAVAL SHIPS (TEST)
2	S9086-PF-STM-010/CH-435	A	FIBER OPTIC TOPOLOGY OPERATION MAINTENANCE AND REPAIR

REV STATUS OF SHEETS	REV	E	E	E	E	E	E	E												
	SHEET	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

DISTRIBUTION STATEMENT A: APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED.

VENDOR ITEM DRAWING

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:	CAGE CODE CONTRACT NO.			DEPARTMENT OF THE NAVY NAVAL SEA SYSTEMS COMMAND WASHINGTON, D.C. 20362-5101															
	APPROVED	D. KNUDSEN	9/30/99																
FRACTIONS +/- ANGLES P DO NOT SCALE DRAWING	DECIMALS .xx+/- .xxx+/-	ENGINEER	G. BROWN	9/30/99	JUMPERS, TEST EQUIPMENT FIBER OPTIC														
		CHECKED	E. BLUEBOND	9/30/99															
		PREPARED	G. BROWN	9/30/99															
		ACCEPTED FOR NAVSEA	H. LEWIS	9/30/99															
MATERIAL:	APPROVED BY NAVSEA	SIGNATURE DOES NOT DENOTE APPROVAL		SIZE	CAGE	ESWBS	DRAWING NO.	REV											
FINISHES:				A	53711	499	6877804	E											
				SCALE: NONE	UCI	WT GRP	SHEET 1 OF 7												

1. NOTES

1.1 SUGGESTED SOURCE OF SUPPLY

FOR A COMPLETE LIST OF VENDORS APPROVED TO MANUFACTURE AND SELL MEASUREMENT QUALITY JUMPER CABLES, PLEASE SEE THE RECOMMENDED PARTS LIST ON THE NAVY SHIPBOARD FIBER OPTIC WEBSITE LOCATED AT <https://fiberoptics.nswc.navy.mil>. VENDOR PART NUMBERS ARE ALSO LOCATED ON THE WEBSITE.

1.2 SUBSTITUTION OF PIECES OR ITEMS IS NOT AUTHORIZED WITHOUT APPROVAL OF THE DESIGN ACTIVITY, NAVAL SURFACE WARFARE CENTER, DAHLGREN DIVISION, PHOTONICS SECTION.

1.3 THESE ITEMS ARE TO BE USED IN THE PERFORMANCE OF FIBER OPTIC TESTING AS SPECIFIED IN THE CURRENT REVISIONS OF REFERENCES 1 AND 2.

1.4 ITEMS NO. 1 THROUGH 4 AND 1SME THROUGH 4SME ARE FOR USE WITH AN OPTICAL TIME DOMAIN REFLECTOMETER (OTDR).

1.5 ITEMS NO. 5 THROUGH 13 AND 5SME THROUGH 13SME ARE FOR USE WITH AN OPTICAL LOSS TEST SET (OLTS).

1.6 INDIVIDUAL ITEMS SHALL BE PROCURED USING THE BASIC DRAWING NUMBER FOLLOWED BY A DASH AND THE ITEM NUMBER FROM TABLE I.

1.7 ALL PIECES IDENTIFIED BY THE MILITARY PART NUMBER SHALL BE FROM AN APPROVED SOURCE OF SUPPLY LISTED ON THE QUALIFIED PRODUCTS LIST (QPL) UNLESS OTHERWISE APPROVED BY THE DESIGN ACTIVITY, NAVAL SURFACE WARFARE CENTER, DAHLGREN DIVISION, PHOTONICS SECTION.

1.8 MARKING SHALL BE IN ACCORDANCE WITH MIL-STD-130.

SIZE	CAGE	ESWBS	DRAWING NO.	REV
A	53711	499	6877804	E
SCALE: NONE		UCI	WT GRP	SHEET 2

2. REQUIREMENTS

- 2.1 THE SHIPBOARD FIBER OPTIC MEASUREMENT QUALITY JUMPERS SHALL MEET THE REQUIREMENTS SPECIFIED HEREIN.
- 2.2 VISUALLY INSPECT THE END FACE OF ALL ST CONNECTORS, TERMINI PINS AND SOCKETS ON MQJ(S) AND COMMENT ON WORKMANSHIP. INSPECTION TO BE PERFORMED USING A 400X VIDEO SCOPE. IN ORDER TO PASS THE INSPECTION, THERE SHALL BE NO VISIBLE SCRATCHES OBSERVED WHEN USING THE VIDEO SCOPE.
- 2.3 THE SHIPBOARD FIBER OPTIC MEASUREMENT QUALITY MEASUREMENT JUMPERS SHALL BE TESTED FOR OPTICAL LOSS AND RETURN LOSS (IF SINGLE MODE) IN ACCORDANCE WITH THE CURRENT REVISION OF REFERENCE 1.
- 2.4 SHIPBOARD FIBER OPTIC MEASUREMENT QUALITY JUMPERS WITH MIL-C-28876 PLUGS OR RECEPTACLES KEYED WITH ONLY THE MASTER KEY SHALL BE VISIBLY MARKED WITH THE FOLLOWING:

WARNING
SPECIAL MEASUREMENT QUALITY JUMPER
VISUALLY VERIFY PROPER KEY ALIGNMENT
BEFORE ENGAGING WITH MATING CONNECTORS.

- 2.5 ALL SHIPBOARD FIBER OPTIC MEASUREMENT QUALITY JUMPERS SHALL BE VISIBLY MARKED WITH THE FOLLOWING:

FIBER OPTIC MEASUREMENT QUALITY
JUMPER CABLE

- 2.6 FOR ITEMS TERMINATED WITH MIL-S-24623/4-01 SPLICES, THE CABLE SHALL BE STRAIN RELIEVED TO THE SPLICE USING ADHESIVE LINED HEAT SHRINK TUBING. CABLE STRENGTH MEMBERS SHALL BE PLACED AROUND THE REAR OF THE SPLICE BEFORE THE HEAT SHRINK TUBING IS APPLIED.
- 2.7 CONNECTORS ASSEMBLED USING COLOR CODED SINGLE FIBER CABLING SHALL ASSIGN THE SINGLE FIBER CABLES TO TERMINI AS FOLLOWS: 1 – BLUE, 2 – ORANGE, 3 – GREEN, 4 – BROWN, 5 – GRAY, 6 – WHITE, 7 – RED, 8 – BLACK. FOR CONNECTORS ASSEMBLED USING SAME COLOR SINGLE FIBER CABLING, THE SINGLE FIBER CABLING SHALL BE MARKED WITH THE CORRESPONDING TERMINUS NUMBER.
- 2.8 MULTIFIBER MEASUREMENT QUALITY JUMPER CABLES SHALL HAVE 18 +/- 1 INCHES OF SINGLE FIBER CABLE EXPOSED AT THE END OF THE JUMPER CABLE TERMINATED WITH SINGLE FIBER CONNECTORS.
- 2.9 MULTIFIBER MEASUREMENT QUALITY JUMPER CABLES CONSTRUCTED USING M85045/16 SINGLE FIBER CABLE SHALL INCLUDE A STRAIN RELIEF MECHANISM AT THE POINT OF TRANSITION FROM THE PROTECTIVE TUBING TO THE UNPROTECTED M85045/16 SINGLE FIBER CABLE. THE STRAIN RELIEF MECHANISM SHALL BE APPROVED BY THE DESIGN ACTIVITY.

SIZE	CAGE	ESWBS	DRAWING NO.	REV
A	53711	499	6877804	E
SCALE: NONE		UCI	WT GRP	SHEET 3

2.10 CONNECTOR PARTS IDENTIFIED FOR SINGLE MODE MEASUREMENT QUALITY JUMPER CABLES MAY BE UTILIZED IN THE CONSTRUCTION OF MULTIMODE JUMPER CABLES.

2.11 END CONNECTIONS ON MULTIMODE MEASUREMENT QUALITY JUMPER CABLES SHALL MEET THE FOLLOWING LOSS REQUIREMENTS:

EACH M29504 TERMINUS SHALL HAVE A MEAN OPTICAL LOSS OF ≤ 0.70 dB AND A MAXIMUM STANDARD DEVIATION OF 0.05 dB. EACH ST TYPE CONNECTOR SHALL HAVE A MEAN OPTICAL LOSS OF ≤ 0.35 dB AND A MAXIMUM STANDARD DEVIATION: OF 0.05 dB. EACH M24623 SHALL HAVE A MEAN OPTICAL LOSS OF ≤ 0.30 dB AND A MAXIMUM STANDARD DEVIATION OF 0.05 dB.

2.12 END CONNECTIONS ON SINGLE MODE MEASUREMENT QUALITY JUMPER CABLES SHALL MEET THE FOLLOWING LOSS REQUIREMENTS:

EACH M29504 TERMINUS SHALL HAVE A MEAN OPTICAL LOSS OF ≤ 0.70 dB AND A MAXIMUM STANDARD DEVIATION OF 0.10 dB. EACH ST TYPE CONNECTOR SHALL HAVE A MEAN OPTICAL LOSS OF ≤ 0.35 dB AND A MAXIMUM STANDARD DEVIATION: OF 0.10 dB. EACH M24623 SHALL HAVE A MEAN OPTICAL LOSS OF ≤ 0.30 dB AND A MAXIMUM STANDARD DEVIATION OF 0.05 dB.

2.13 END CONNECTIONS ON ENHANCED PERFORMANCE SINGLE MODE MEASUREMENT QUALITY JUMPER CABLES SHALL MEET THE FOLLOWING REFLECTANCE REQUIREMENTS:

M29504 TERMINUS REFLECTANCE: -43.0 dB OR GREATER
 ST TYPE CONNECTOR REFLECTANCE: -43.0 dB OR GREATER

NOTE: ALL SINGLE MODE MEASUREMENT QUALITY JUMPER CABLES SHALL MEET THE ENHANCED PERFORMANCE REQUIREMENTS FOR REFLECTANCE AS STATED ABOVE.

2.14 CONNECTOR AND TERMINUS REFLECTANCE SHALL BE MEASURED IN ACCORDANCE WITH EIA/TIA-455-107.

3. VERIFICATION OF REQUIREMENTS

3.1 UNLESS OTHERWISE SPECIFIED BY THE PROCURING ACTIVITY THE SUPPLIER IS RESPONSIBLE FOR THE PERFORMANCE OF ALL ITEMS CONTAINED HEREIN WITH REGARD TO THE ABOVE REQUIREMENTS. TEST DATA MAY BE PROVIDED TO DEMONSTRATE PERFORMANCE, HOWEVER THE PROCURING ACTIVITY RESERVES THE RIGHT TO PERFORM ANY OF THE INSPECTIONS SPECIFIED. TEST SAMPLES SHALL BE SUBMITTED TO THE DESIGN ACTIVITY FOR APPROVAL.

SIZE	CAGE	ESWBS	DRAWING NO.	REV
A	53711	499	6877804	E
SCALE: NONE		UCI	WT GRP	SHEET 4

REV E
SHT 5
NAVSEA DRAWING NO. 6877804
ESWBS 499

MULTIMODE FIBER OPTIC MEASUREMENT QUALITY JUMPER CABLES

ITEM NO.	LENGTH (M)	CONNECTOR MILITARY OR VENDOR PART NO.	CABLE MILITARY OR VENDOR PART NO.	CONNECTOR ADAPTER VENDOR PART NO.	CONNECTOR MILITARY OR VENDOR PART NO.	TERMINI MILITARY OR VENDOR PART NO.
1	50	MSTC1100 106 812 274	M85045/16-01	NA	MSTC1100 106 812 274	NA
2	50	MSTC1100 106 812 274	M85045/16-01	NA	M24623/4-01	NA
3	50	MSTC1100 106 812 274	M85045/16-01	NA	NA	M29504/14-4131C
4	50	MSTC1100 106 812 274	M85045/16-01	NA	NA	M29504/15-4171C
5	1	MSTC1100 106 812 274	M85045/16-01	NA	MSTC1100 106 812 274	NA
6	1	MSTC1100 106 812 274	M85045/16-01	NA	M24623/4-01	NA
7	1	MSTC1100 106 812 274	M85045/15-01	NA	1145846-B042POS	M29504/14-4131C
			M85045/16-01 127-021-1-1-16CKHE	189-014NF13-07	4565143-B04POS	
8	1	MSTC1100 106 812 274	M85045/15-01	NA	1145840-B042SOS	M29504/15-4171C
			M85045/16-01 127-021-1-1-16CKHE	189-014NF13-07	4565141-B04SOS	
9	1	MSTC1100 106 812 274	M85045/13-01	NA	1145846-C081POS	M29504/14-4131C
			M85045/16-01 127-021-1-1-16CKHE	189-014NF15-07	4565143-C08POS	
10	1	MSTC1100 106 812 274	M85045/13-01	NA	1145840-C081SOS	M29504/15-4171C
			M85045/16-01 127-021-1-1-16CKHE	189-014NF15-07	4565141-C08SOS	
12	1	MSTC1100 106 812 274	M85045/16-01 127-021-1-1-32CKHE	189-014NF23-07	4565143-F31POS	M29504/14-4131C
13	1	MSTC1100 106 812 274	M85045/16-01 127-021-1-1-32CKHE	189-014NF23-07	4565141-F31SOS	M29504/15-4171C

TABLE I

SIZE A	CAGE 53711	ESWBS 499	DRAWING NO. 6877804	REV E
SCALE: NONE UCI		WT GRP	SHEET 5	

ESWBS NAVSEA DRAWING NO. 6877804 SHT 6 REV E

SINGLE MODE ENHANCED PERFORMANCE FIBER OPTIC MEASUREMENT QUALITY JUMPER CABLES

ITEM NO.	LENGTH (M)	CONNECTOR MILITARY OR VENDOR PART NO.	CABLE MILITARY OR VENDOR PART NO.	CONNECTOR ADAPTER VENDOR PART NO.	CONNECTOR MILITARY OR VENDOR PART NO.	TERMINI MILITARY OR VENDOR PART NO.
1SME	50	MSTC2100 106 812 258	M85045/16-02	NA	MSTC2100 106 812 258	NA
3SME	50	MSTC2100 106 812 258	M85045/16-02	NA	NA	M29504/14-4141C
4SME	50	MSTC2100 106 812 258	M85045/16-02	NA	NA	M29504/15-4181C
5SME	1	MSTC2100 106 812 258	M85045/16-02	NA	MSTC2100 106 812 258	NA
7SME	1	MSTC2100 106 812 258	M85045/15-02	NA	1145846-B042POS	M29504/14-4141C
			M85045/16-02 127-021-1-1-16CKHE	189-014NF13-07	4565143-B04POS	
8SME	1	MSTC2100 106 812 258	M85045/15-02	NA	1145840-B042S0S	M29504/15-4181C
			M85045/16-02 127-021-1-1-16CKHE	189-014NF13-07	4565141-B04S0S	
9SME	1	MSTC2100 106 812 258	M85045/13-02	NA	1145846-C081POS	M29504/14-4141C
			M85045/16-02 127-021-1-1-16CKHE	189-014NF15-07	4565143-C08POS	
10SME	1	MSTC2100 106 812 258	M85045/13-02	NA	1145840-C081S0S	M29504/15-4181C
			M85045/16-02 127-021-1-1-16CKHE	189-014NF15-07	4565141-C08S0S	
12SME	1	MSTC2100 106 812 258	M85045/16-02 127-021-1-1-32CKHE	189-014NF23-07	4565143-F31POS	M29504/14-4141C
13SME	1	MSTC2100 106 812 258	M85045/16-02 127-021-1-1-32CKHE	189-014NF23-07	4565141-F31SOS	M29504/15-4181C

TABLE II

SIZE A	CAGE 53711	ESWBS 499	DRAWING NO. 6877804	REV E
SCALE: NONE UCI		WT GRP	SHEET 6	

REV E
SHT 7
NAVSEA DRAWING NO. 6877804
ESWBS 499

FOR A COMPLETE LIST OF VENDORS APPROVED TO MANUFACTURE AND SELL MEASUREMENT QUALITY JUMPER CABLES, PLEASE SEE THE RECOMMENDED PARTS LIST ON THE NAVY SHIPBOARD FIBER OPTIC WEBSITE LOCATED AT <https://fiberoptics.nswc.navy.mil>. VENDOR PART NUMBERS ARE ALSO LOCATED ON THE WEBSITE.

SIZE A	CAGE 53711	ESWBS 499	DRAWING NO. 6877804	REV E
SCALE: NONE		UCI	WT GRP	SHEET 7