

FIBER OPTICS TRANSMISSION SYSTEM

CX-13295/G

TS-4117/G

**MOS 31L**

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(TSCs)

HEADQUARTERS, DEPARTMENT OF THE ARMY

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## NOTES:

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## General Fiber Optics Theory

Fiber optic transmission data consists of the electro-optic conversion of data signals. Electrical signals are converted to optical signals and transmitted through fiber optic cable. A receiver then converts them back to electrical signals.

Fiber optics have many advantages over the coaxial system. Fiber optics can carry more channels of information with less loss of signal strength. The cable is smaller in size and weight. Fiber optics do not generate nor are subject to electromagnetic interference as with electrical transmission equipment.

Fiber optics have few disadvantages. The strength of the fiber optic signal can be affected by a break in the cable link, dirty optical connectors, and unsecured connectors. This reduction in strength is called attenuation.

## NOTES:

## Abbreviations and Acronyms

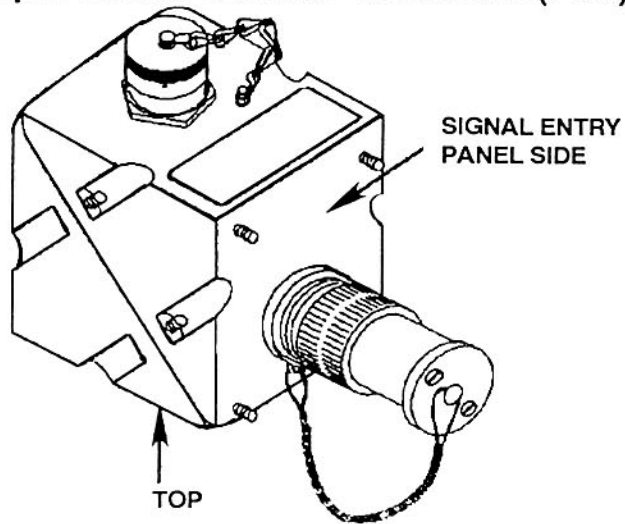
<b>ABS</b>	absolute
<b>BTRY INTLK</b>	battery interlock
<b>FOBC</b>	Fiber Optic Bulkhead Connector
<b>FOCA</b>	Fiber Optic Cable Assembly
<b>FOLBC</b>	Fiber Optic Loopback Connector
<b>FOM</b>	Fiber Optic Modem-Receiver-Transmitter
<b>FOTS (LH)</b>	Fiber Optic Transmission System (Long Haul)
<b>FTF</b>	Fiber Optic Cable Assembly Test Facility
<b>FTS</b>	Field Test Set TS-4117/G
<b>km</b>	kilometer (0.6214 mile)
<b>MCF</b>	Maintenance Orderwire Communications Facility
<b>MOW</b>	maintenance orderwire
<b>OSM</b>	Optical Strength Meter
<b>PMCS</b>	Preventive Maintenance Checks and Services
<b>RCA</b>	Reference Cable Assembly
<b>REL</b>	Relative

## Fiber Optic Transmission System (Long Haul) FOTS (LH)

The FOTS (LH) provides a shelter to shelter fiber optic communications link. The FOTS (LH) takes the signals from the shelter communications equipment, converts them to an optical signal and transmits the optical signal through the fiber optic cable (CX-13295/G) to another communications shelter.

The fiber optic modem-receiver-transmitter (FOM); the optical communications test set, TS-4117/G; and the fiber optic cable assembly (FOCA), CX-13295/G form the major components of the FOTS (LH).

## Fiber Optic Modem-Receiver-Transmitter (FOM), MD-1272/G

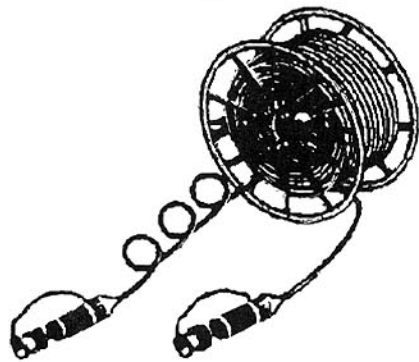


The FOM performs electro-optical conversions of signals between shelters.

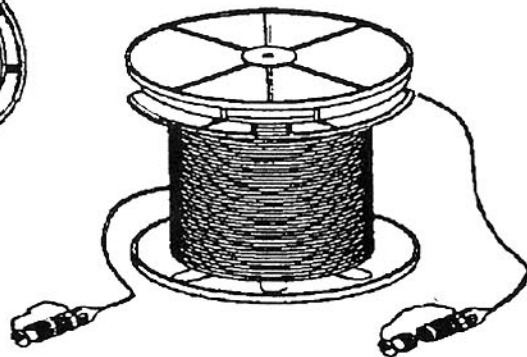
## Absolute Power Measurement Table

DISTANCE	ABSOLUTE POWER ( $\pm 0.5$ dB)
1 km	-25.3 dBm
2 km	-28.0 dBm
3 km	-30.8 dBm
4 km	-33.5 dBm
5 km	-36.3 dBm
6 km	-39.0 dBm
7 km	-41.8 dBm
8 km	-44.5 dBm

## Fiber Optic Cable Assembly (FOCA), CX-13295/G



(300 METERS)  
(6020-01-220-5435)



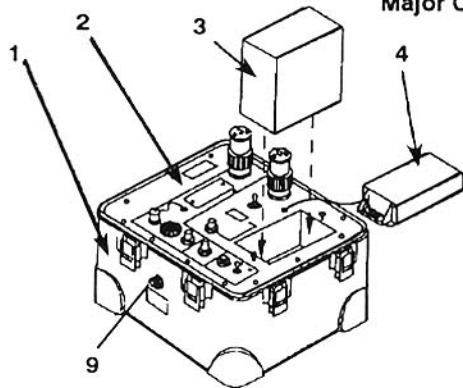
(1000 METERS)  
(6020-01-208-1147)

Transmits optic signals up to 8 kilometers (5 miles).

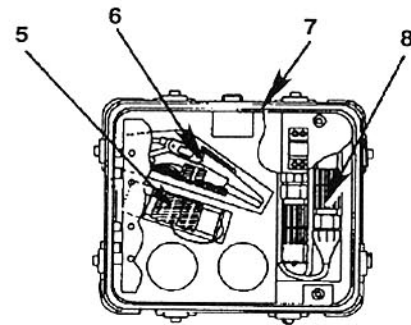
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## Optical Communications Test Set, TS-4117/G

### Major Components TS-4117/G



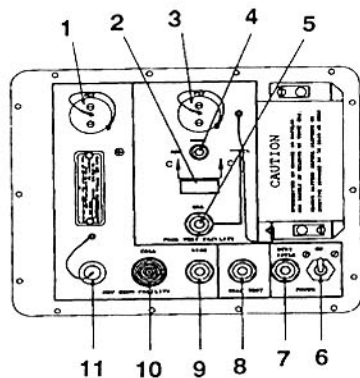
1. Case bottom
2. Panel assembly
3. Battery
4. Battery box cover
5. FOLBC



6. Handset
7. O-ring
8. RCA
9. Pressure relief valve

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## TS-4117/G Front Panel Controls and Indicators



- |                  |                      |
|------------------|----------------------|
| 1. MCF connector | 7. BRTY INTLK switch |
| 2. OSM display   | 8. SELF TEST switch  |
| 3. FTF connector | 9. RING switch       |
| 4. MODE switch   | 10. CALL indicator   |
| 5. CAL switch    | 11. MOW connector    |
| 6. POWER switch  |                      |

## PMCS and Self Tests

### PMCS:

PMCS is performed on the TS-4117/G before self tests.

### Self Tests:

Power on test.

Front panel indicator test.

Maintenance Orderwire Communications Facility (MCF) test.

Fiber Optic Cable Assembly Test Facility (FTF) test.

MCF optical transmitter power test.