

EQUIPMENT SERVICEABILITY CRITERIA
FOR
COMMUNICATIONS SECURITY EQUIPMENT
TSEC/KW-7

Headquarters, Department of the Army, Washington, D.C., 26 March 1970

	Paragraph
Section I. INSTRUCTIONS	1 - 5
II. TSEC/KW-7 EVALUATION PROCEDURE	6, 7

Section I. INSTRUCTIONS

1. Purpose. This manual furnishes the user with a procedure for evaluating the readiness condition of Communications Security Equipment TSEC/KW-7 to perform satisfactorily its primary mission for 90 days with normal maintenance support.

Note. Application of this procedure, however, does not eliminate or reduce the requirement for prescribed maintenance service on the equipment and does not authorize replacement of components.

2. Definitions. *a. Equipment Category GREEN.* Equipment free of condition that would limit the reliable performance of its primary mission for a period of 90 days of operation.

b. Equipment Category AMBER. Operationally ready equipment that possesses a limiting factor(s) which may curtail a reliable performance of its primary mission for a period of 90 days of operation.

c. Equipment Category RED. Equipment unable to perform its primary mission immediately or possessing an unacceptable reliability for sustained performance (90 days) of its primary mission.

d. Color Rating. When color ratings are designated for an item,

*This manual supersedes TM 11-5810-221-ESC, 20 January 1966.

the rating is determined by **AMBER** being lower than **GREEN**, and **RED** being the lowest rating.

e. Multiple Aspect Equipment. An item of issue which is composed of subsystems and/or components which are the responsibility of more than one logistics manager.

3. General Instructions. *a.* This evaluation will be performed by the equipment operator, assisted by organizational maintenance personnel as required.

b. This technical manual will be filed with the equipment log.

c. This evaluation will be performed on the item(s) actually being rated.

d. If the TSEC/KW-7 is authorized to the evaluating organization but not available as equipment on hand for the evaluation, this overall evaluation procedure shall be rated **RED**.

e. A number of ancillary assemblies may be used with TSEC/KW-7; i.e., Remote Control Unit KWX-7/TSEC, Plain Text Safety Device KWX-9/TSEC, and Fixed Station Adapter KWX-11/TSEC. If one or more of those assemblies are authorized and essential to mission but not on hand, the TSEC/KW-7 shall automatically be rated **RED**.

f. Authorized ancillary assemblies shall be tested and rated according to results of the checkpoint procedure, paragraph 7.

g. This equipment is rated on the basis of capability for immediate operation. The rating is not meaningful unless each check is made with the utmost care and accuracy.

h. Record the evaluation results on DA Form 2404 (Equipment Inspection and Maintenance Worksheet). The blocks will be completed as shown below:

(1) *Block 1.* Insert the organizational designation of the unit performing the evaluation.

(2) *Block 2.* Insert "TSEC/KW-7", model letter, if any, and short titles of ancillary items authorized to the organization.

(3) *Block 3.* Insert the equipment serial number.

(4) *Blocks 4a, b, c, and d.* Not used.

(5) *Block 5.* Insert the standard six-digit calendar date on which equipment serviceability criteria evaluation is performed (example: 9 March 1970 would be 700309).

(6) *Block 6.* Insert the letters "ESC."

(7) *Block 7.* Insert "TM 11-5810-221-ESC" and its date of issue.

(8) *Column a (below block 8a), "TM ITEM NO."* Insert the checkpoint item number.

(9) *Column b, "STATUS."* Place each obtained color rating opposite the checkpoint item to which it applies. (Insert **GREEN**, **AMBER**, or **RED**, as applicable.)

(10) *Column c, "DEFICIENCIES OR SHORTCOMINGS."* Briefly describe each checkpoint item, using the item heading, abbreviated if necessary.

(11) *Blocks 8a, 8b, 9a, and 9b.* Self-explanatory.

(12) *Block 10.* Obtain the color rating for the equipment by taking the lowest color rating determined for any checkpoint. Insert the equipment color categorization.

Note. If an URGENT modification work order has not been applied to any authorized equipment, the equipment and the system will be rated **RED**.

4. Special Instructions. A **RED** color rating for any individual checkpoint item automatically places the equipment in the **RED** category. The evaluation may be completed if it does not cause damage to the equipment and does not **RESULT IN A PRACTICE THAT IS DANGEROUS TO SECURITY OR THAT MAY LEAD TO A COMPROMISE**.

5. Reporting of Errors. The reporting of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to Publications) and forwarded

direct to the Commanding General, U.S. Army Strategic Communications Command, ATTN: COMSEC-NMP, Fort Huachuca, Ariz., 85613.

Section II. TSEC/KW-7 EVALUATION PROCEDURE

6. Evaluation Requirements. *a. Reference.* KAO-83 ()/TSEC, Operating Instructions for TSEC/KW-7, is required to apply this ESC. Authorized recipients may obtain the KAO by requisition through COMSEC logistic channels.

b. Ancillary Assemblies.

(1) Checkpoint item 14 is a test of the KW-9/TSEC. If this assembly is not authorized, rate item 14 GREEN.

(2) The checkpoint test procedure is arranged so that the KW-7/TSEC or the KW-11/TSEC or both are tested if present in the configuration. If they are not present, the basic test procedure for TSEC/KW-7 is not changed.

c. Operating Conditions.

(1) Two TSEC/KW-7s are required for the evaluation procedure, the equipment under test, and an operating (serviceable) equipment.

(2) Each TSEC/KW-7 should be properly installed in its communications configuration. To insure proper installation, the applicable ESC for the communications configuration and all publications pertaining to installation and operation of the TSEC/KW-7 must be available for reference.

(3) Three general configurations in which the TSEC/KW-7 can be operated are —

(a) Half-duplex operation in which the TSEC/KW-7 alternately sends or receives.

(b) Full-duplex operation in which the TSEC/KW-7 is used for sending only.

(c) Full-duplex operation in which the TSEC/KW-7 is used for receiving only.

(4) Testing for the above operations will be as follows:

(a) Half-duplex: Test all checkpoint items.

(b) Full-duplex send: Test all checkpoint items except 6, 7, and 13. Rate the excepted items GREEN.

(c) Full-duplex receive: Test all checkpoint items except 4, 5, and 12. Rate the excepted items GREEN.

(5) The Break Function Test, items 8 through 10, will be assigned a rating of GREEN under either of the following conditions:

(a) Operating on any radio circuit.

(b) Operating a full-duplex equipment.

d. Preliminary Arrangements.

(1) Select a TSEC/KW-7 or an operable station employing the TSEC/KW-7, operating in the same mode and transmission media as the equipment under test.

(2) The two TSEC/KW-7s used will be referred to as follows:

(a) Equipment undergoing test — Station "A".

(b) Operable equipment — Station "B".

(3) Prepare a short test tape (test message) consisting of a known grouping of letters, numbers, and functional characters.

7. Procedure. *a. Information to be Determined by Inspection and Operation.* Evaluate each item listed and record the proper color ratings on DA Form 2404 as described in section I. DO NOT VARY THE SEQUENCE OF THE ITEMS. EACH TEST DEPENDS ON THE PRECEDING ITEM.

ITEM 1. MWOs.

Determine whether URGENT MWOs have been applied to authorized equipment.

Condition	All URGENT MWOs have been applied.	Any URGENT MWO not applied.
------------------	------------------------------------	-----------------------------

Rating**GREEN****RED****ITEM 2. Applying Power.**

a. Prepare for operation as follows:

(1) Prepare each TSEC/KW-7 at Station "A" and "B" (as selected in paragraph 6d) for operation with the proper key according to instructions in KAO-83 ()/TSEC.

(2) Turn the P-C-R switch of both equipments to the CIPHER position.

(3) Have Station "B" actuate equipment.

b. Move the POWER switch at Station A to the ON position.

power lamp comes on, OR at least one front panel lamp flashes, OR any combination of front panel lamps flash. Power lamp DOES NOT have to light for a rating of **GREEN**.

Condition

No front panel lamps flash, OR no lamps come on.

Rating**GREEN****RED****ITEM 3. Alarm Test.**

Turn the ALARM TEST switch from OFF to each of its remaining positions, pausing at each position.

Indications for each test position are as contained in the alarm test table of KAO-83 ()/TSEC.

Condition

Any incorrect indication occurs.

Rating**GREEN****RED**

Note. If Remote Control Unit KWX-7/TSEC is not authorized, proceed with item 4 testing of TSEC/KW-7 alone. If Remote Control Unit KWX-7/TSEC is authorized, make the following arrangements for testing KWX-7/TSEC and TSEC/KW-7 simultaneously:

1. Turn the P-C-R Switch on TSEC/KW-7 at Station A to the R (remote) position.
2. Turn the P-C-R Switch on KWX-7/TSEC to the C (cipher) position.
3. Proceed with items 4 through 13, operating from the Remote Control Unit KWX-7/TSEC.

ITEM 4. Preparation for Transmission From Station "A" (Cipher Mode).

At Station "A", depress SEND switch for at least 10 seconds, making sure that the SEND and P&I lamps are lit, before releasing the switch.

At Station "A", SEND and P&I lamps remain lit. After a short period the P&I lamp extinguishes. In the event either the SEND or P&I lamp does not light and the other performs correctly, keyboard is operable after a 30-second delay.

Both the SEND and P&I lamps do not light, OR one lamp lights and the keyboard fails to operate after a 30-second delay.

Condition

Rating

GREEN

RED

ITEM 5. Transmission From Station "A" (Cipher Mode).

Transmit from Station "A" via tape or keyboard for at least 5 minutes. For tape transmission use the prepared test tape.

Teletypewriter equipment at Station "B" prints test message free of errors. At Station "A", when there is a requirement for home copy, the teletypewriter printer prints test message free of errors, or the reperforator produces test tape free of

errors. If errors occur, they can be disregarded if by retransmitting the test message three or more additional times it can be established that the errors occurred because of fadeouts, hits, human elements, and similar conditions.

Teletypewriter equipment at Station "B" prints garble or does not print. When home copy is required, test message OR reperforator tape, OR both, at Station "A" are garbled or no copy is printed.

Condition

Rating

GREEN

RED

ITEM 6. Preparation for Reception by Station "A" (Cipher Mode).

At Station "B", depress SEND switch for at least 10 seconds, making sure that the SEND and P&I lamps are lit before releasing the switch.

At Station "A", SEND lamp goes out and the P&I lamp lights for a short period and then goes out; OR SEND lamp goes out, the P&I lamp does not light and the teletypewriter equipment receives a letters shift.

At Station "A", SEND lamp remains lit and the P&I lamp does not light; OR the P&I lamp does light and will not extinguish; OR the P&I lamp goes out but the equipment does not receive the letters shift.

Note. If the equipment is in full-duplex receive only, the SEND lamp will not light.

Condition

Rating

GREEN

RED

ITEM 7. Reception by Station "A" (Cipher Mode).

Transmit from Station "B" via tape or keyboard for at least 5 minutes.

Teletypewriter equipment at

Station "A" prints message free of errors. If errors occur, they can be disregarded if by retransmitting the test message three or more additional times it can be established that they occurred because of fadeouts, hits, human elements, and similar conditions.

Test message received at Station "A" is garbled, OR no copy is received.

Condition

Rating

GREEN

RED

ITEM 8. Break Function (Transmit).

At Station "A", depress the BREAK switch until the BREAK lamp lights (about 5 seconds).

At Station "A", BREAK lamp lights and the alarm buzzer sounds. Station "B" goes into a BREAK condition.

Either the BREAK Lamp, OR the alarm buzzer fails to operate at Station "A".

At Station "A", both the BREAK lamp and the alarm buzzer do not operate, OR Station "B" fails to go into a BREAK condition.

Condition

Rating

GREEN

AMBER

RED

ITEM 9. Break Restore Switch.

At Station "A", depress the BREAK RESTORE switch.

At Station "A", BREAK lamp extinguishes and the alarm buzzer ceases to operate.

Either the BREAK lamp fails to extinguish, OR the alarm buzzer continues to operate, OR both.

Condition

Rating

GREEN

RED

ITEM 10. Break Function (Receive).

At Station "A", go into a transmit condition by depressing the SEND switch and holding it for at least 10 seconds. Station "B" will be in the receive condition when the P&I lamp goes out. When this occurs, depress the Station "B" BREAK switch until the BREAK lamp lights (about 5 seconds).

Condition	At Station "A", SEND lamp extinguishes, BREAK lamp lights, and the alarm buzzer operates.	Either the BREAK lamp, OR the alarm buzzer fails to operate at Station "A".	At Station "A", SEND lamp remains lit, OR BREAK lamp does not light and the alarm buzzer does not operate.
Rating	GREEN	AMBER	RED
Before performing the next item, depress the BREAK RESTORE switch at both Stations.			

ITEM 11. Preparation for Plain Asynchronous Mode.

At Stations "A" and "B", turn P-C-R switch to the PLAIN ASYNC position and depress the SEND switch at both stations. Hold switch for a minimum of 10 seconds, making sure that the SEND and P&I lamps light.

Condition	At Station "A", when the P-C-R switch is turned to PLAIN ASYNC, the alarm buzzer sounds and the PLAIN lamp lights. When the SEND switch is released, the P&I lamp extinguishes. PLAIN lamp does not have to light for a rating of GREEN.	At Station "A" alarm buzzer fails to operate, OR both the SEND lamp and the P&I lamp do not light, OR the P&I lamp lights and does not extinguish.
Rating	GREEN	RED

ITEM 12. Transmission from Station "A" (Plain Asynchronous Mode).

Transmit test message from Station "A" via tape or keyboard for about 2 minutes.

Teletypewriter equipment at Station "B" prints test

message free of errors. At Station "A", when there is a requirement for home copy, the teletypewriter printer or reperforator prints test message free of errors. If errors occur, they can be disregarded if by retransmitting the test message three or more additional times it can be established that they occurred because of fadeouts, hits, human elements, and similar conditions.

Teletypewriter equipment at Station "B" prints garble or does not print. When home copy is required, the test message OR reperforator tape, OR both, at Station "A" is garbled or no copy is printed.

Condition

Rating

GREEN

RED

ITEM 13. Reception by Station "A" (Plain Asynchronous Mode).

Transmit test message from Station "B" via tape or keyboard for about 2 minutes.

At Station "A" the teletypewriter equipment prints test message free of errors. If errors occur, they can be disregarded if by retransmitting the test message three or more additional times it can be established that the errors occurred because of fadeouts, hits, human elements, and

Test message received at Station "A" is garbled, OR no

Condition	similar conditions.	copy is received.
Rating	GREEN	RED
ITEM 14. Plain Text Safety Device KWX-9/TSEC Operation With TSEC/KW-7.		
Connect the KWX-9/TSEC, Plain Text Safety Device, to the TSEC/KW-7 main unit, or to the KWX-7/TSEC, Remote Control Unit as applicable. Perform the following to test the device.		
<ul style="list-style-type: none"> a. At Station "A", press the switch on the Plain Text Safety Device. See condition <i>a</i>, below. b. Transmit test message via tape or keyboard for at least 2 minutes. See condition <i>b</i>, below. c. Cease transmitting for approximately 1 minute. See condition <i>c</i>, below. d. Proceed to transmit test message via tape or keyboard for approximately 2 minutes. See condition <i>d</i>, below. 		
<p><i>All conditions in this column must be met in order to assign a rating of GREEN.</i></p> <ul style="list-style-type: none"> a. At Station "A", Red lamp on Plain Text Safety Device goes out. b. The teletypewriter prints the test message free of errors. c. Red lamp on Plain Text Safety Device lights within 8 to 12 seconds. d. The teletypewriter printing equipment is inoperative. 		<p><i>An indication in this column will result in a rating of RED.</i></p> <ul style="list-style-type: none"> a. At Station "A", Red lamp on Plain Text Safety Device does not go out. b. No message on teletypewriter equipment. c. Red lamp does not light within prescribed time limits or does not light at all. d. Copy is received on teletypewriter printing equipment.
Condition	GREEN	RED

b. Rating for TSEC/KW-7.

- (1) Determine if any AMBER ratings were recorded.
- (2) Determine if any RED ratings were recorded.
- (3) The color rating will be the lowest rating recorded (above).

'By Order of the Secretary of the Army:

Official:

KENNETH G. WICKHAM,
Major General, United States Army,
The Adjutant General.

W. C. WESTMORELAND,
General, United States Army,
Chief of Staff.

Distribution:

To be distributed in accordance with DA Form 12-43 (qty rqr Block #26), Organizational maintenance requirements for COMSEC Equipment.

