

DEPARTMENT OF THE ARMY SUPPLY BULLETIN

SERVICEABILITY STANDARDS FOR RADIO SET AN/GRC-19

Ref: TM 11-274

Department of the Army, Washington 25, D. C.

28 December 1955

1. General. *a.* See SB 11-100, Serviceability Standards for Signal Equipment in Hands of Troops, for general provisions of serviceability standards, and explanations of the use of this series of supply bulletins. An index to supply bulletins of serviceability standards for specific equipments is also included for reference purposes.

b. Comments and constructive criticism of these bulletins should be submitted to the Chief Signal Officer (SIGTM-M), Washington 25, D. C.

2. Description of the Equipment. Radio Set AN/GRC-19 is a receiver and transmitter combination designed for reception and transmission of radio telegraph and voice signals. The operating frequency range of the transmitter is 1.5 to 20 megacycles. The operating frequency range of the receiver is 0.5 to 32 megacycles.

3. General Requirements. *a.* The primary power source must supply 22 to 30 volts dc (direct current) at 45 amperes. (Surge currents up to 160 amperes will be encountered.) The vehicle in which the set is installed will adequately furnish the required power.

b. The 15-foot whip antenna supplied with the radio set, or Antenna Group AN/GRA-12 issued separately, may be used to conduct the tests in this standard.

c. Radio Set AN/GRC-19 will be tested by establishing a line of sight communication net over open terrain, between the radio sets. A monitor set, known to be in good operating condition,

should be located at a reasonable distance from the other sets to provide both voice and cw transmissions and reception for checking the radio sets under test. The monitor set should provide a test transmission on one frequency in each band in the transmitter.

d. The accessories supplied with the radio set will be connected as follows:

- (1) The telegraph key to an audio connector at the receiver to key the transmitter.
- (2) The headset to the audio connector on the receiver.
- (3) The microphone to the audio connector on the transmitter.

4. Special Requirements. *a.* All cables must be undamaged and securely attached to their proper receptacles.

b. The fuses in use, and the spares, should be of the indicated value and located as follows:

- (1) Mounted on the transmitter front panel is one 15 ampere fuse.
- (2) Mounted inside the transmitter case are—
 - (a) One 15 ampere spare fuse.
 - (b) One 20 ampere fuse in use, and one spare.
 - (c) One 30 ampere fuse in use, and one spare.
- (3) Mounted on the receiver front panel are—
 - (a) One 5 ampere fuse in use, and one spare.
 - (b) One 0.5 ampere fuse in use, and one spare.

c. Controls should be checked for positive action. There must not be binding, scraping, misalignment, or excessive looseness.

5. Preliminary Procedure. a. Set the controls on the receiver as follows:

Control	Setting
B. F. O. switch.....	OFF
AGC switch.....	ON
FUNCTION switch.....	OFF
BANDWIDTH switch.....	8 kc
DIAL DIM switch.....	OFF

b. Set the controls on the transmitter as follows:

Control	Setting
DIAL DIM switch.....	OFF
TEST KEY.....	OFF
RELAY-NORMAL-DUPLEX.....	NORMAL
SERVICE SELECTOR.....	OFF
LINE LEVEL.....	+12 DBM

6. Test Procedure and Requirements. a. Proceed as follows and note particularly that the operation of the radio set is consistent with the specified requirements.

- (1) Start the receiver by placing the FUNCTION switch in the STAND BY position. Start the transmitter by placing the SERVICE SELECTOR switch in the STAND BY position. Allow the equipment to warm up for 5 minutes before operating.
- (2) Set the receiver function switch to NORMAL. Set the DIAL DIM control to DIAL DIM and then to ON. The dial lamp will light and its brilliance will increase with each position.
- (3) Adjust the A. F. GAIN and the R. F. GAIN-SQUELCH control for noise output from the headset.
- (4) Calibrate the receiver in accordance with the instructions contained in paragraph 30 in TM 11-274.
- (5) Set the transmitter SERVICE SELECTOR switch to CALIBRATE. After approximately 1 minute, a movement of air will be felt at the air vents indicating that the blower is in operation.
- (6) Set the transmitter TEST METER switch to the BATT position. The TEST METER will indicate normal battery voltage in the shaded portion marked BATT.
- (7) Set the transmitter DIAL DIM control to DIM, and then to FULL. The dial

lamp will light and increase in brilliance when the control is moved from DIM to FULL position.

- (8) Calibrate the transmitter in accordance with the instructions contained in paragraph 31 of TM 11-274.

b. When operation is on voice, proceed as follows:

- (1) Set the SERVICE SELECTOR switch to VOICE and the TEST METER to PA GRID.
- (2) Select a frequency for each of the ten bands on the transmitter. Preset the transmitter to eight of these frequencies, one for each position of the PRESET CHANNELS switch.
- (3) The auto tune circuit will function for each position of the switch. On completion of each auto tune cycle, the TEST METER will indicate in the shaded portion marked PA GRID.
- (4) Set the TEST METER to PA CATH and press the microphone button to key the transmitter. The TUNING INDICATOR lamp will light, the dynamotor will start, and the TEST METER will read in the shaded portion marked PA CATH.
- (5) Speak clearly into the microphone and establish contact with the monitor. Transmission and reception should be clear and intelligible.
- (6) During transmission with the monitor, the operation of the transmitter should be consistent with the following:
 - (a) The AUDIO LEVEL meter should read at least 85 percent.
 - (b) Voice sidetone should be heard in the headset.
- (7) During reception from the monitor, the receiver operation should be consistent with the following:
 - (a) Vary the GAIN control clockwise through its entire range. The signal in the headset will increase in volume as the control is turned.
 - (b) Vary the ANTENNA TRIM control through its entire range. The volume of the signal in the headset will vary. Set the ANTENNA TRIM control for MAXIMUM signal output.
 - (c) Set the BAND WIDTH switch successively to each position. As the band

width is decreased, the volume of the background noise in the headset will be reduced.

- (d) Set the FUNCTION switch to LIMITER. The volume of noise in the headset will be reduced.
- (e) Set the FUNCTION switch to SQ. Increase the RF GAIN SQUELCH THRESH until the noise in the headset is reduced to zero. When a signal is received from the monitor, it will be heard in the headset, indicating proper squelch operation.

c. When operation is on cw, proceed as follows:

- (1) Set the SERVICE SELECTOR switch to CW and the TEST METER to PA CATH.
- (2) Set the receiver B. F. O. switch to ON.

BY ORDER OF THE SECRETARY OF THE ARMY:

- (3) Set the TEST KEY switch to ON. The dynamotor will start after approximately 10 seconds, the indicator lamp will light, and the TEST METER will indicate in the shaded portion marked PA CATH.
- (4) Release the TEST KEY and key the transmitter with the telegraph key. The transmission and reception, with the monitor station, must be clear and intelligible and a 400 cycle side tone will be heard in the headset.
- (5) During reception, vary the BFO PITCH control through its entire range. The tone of the cw signal will vary as the control is varied.

d. Repeat the tests in b and c above, using the remaining seven frequencies.

e. Set up the transmitter for the other two frequencies and repeat the tests in b through d above.

MAXWELL D. TAYLOR,
General, United States Army,
Chief of Staff.

OFFICIAL:

JOHN A. KLEIN,
Major General, United States Army,
The Adjutant General.

DISTRIBUTION:

Active Army:

CNGB (1)
Tec Svc, DA (1) except CSIGO (50)
Tec Svc Bd (1)
Hq CONARC (4)
CONARC Bd (Incl ea test sec) (1)
Army AA Comd (2)
OS Maj Comd (5)
OS Base Comd (5)
Log Comd (5)
MDW (1)
Armies (5)
Corps (2)
Tng Div (2)
Ft & Cp (2)
Gen & Br Svc Sch (2) except Sig Sch (15)
CGSC (3)
Gen Depots (2) except Atlanta Gen Depot (None)
Sig Sec, Gen Depot (20) except Sig Sec, San Antonio Gen Depot (30)
Sig Sec, Atlanta Gen Depot (30)
Sig Depots (75)

Trans Terminal Comd (2)
OS Sup Agencies (2)
Sig Fld Maint Shops (3)
Sig Lab (5)
Mil Dist (1)
Units organized under following TOE's:
5-15R, Engr Cmbt Bn, Div (2)
5-16R, Hq, H & S Co, Engr Cmbt Bn, Div (2)
5-192R, Hq & Hq Co, Engr Cmbt Gp (2)
6-501R, Hq & Hq Btry, Corps Arty or Abn Corps Arty (2)
6-538R, FA Rkt Btry, 762mm Rkt, Self-Propelled (2)
6-545R, FA Msl Bn, Cpl (2)
6-546R, Hq & Hq Btry, FA Msl Bn, Cpl (2)
7R, Inf Div (2)
7-15R, Inf Bn (2)
7-16R, Hq & Hq Co, Inf Bn (2)
11-7R, Sig Co, Inf Div (3)
11-16R, Hq & Hq Co, Sig Bn, Corps or Abn Corps (3)

11-57R, Armd Sig Co (3)
11-128R, Sig Depot Co (3)
11-500R (AA-AE), Sig Svc Org (3)
11-557R, Abn Sig Co (3)
11-587R, Sig Base Maint Co (3)
11-592R, Hq & Hq Co, Sig Base Depot (3)
11-597R, Sig Base Depot Co (3)
17R, Armd Div (2)
32-56R, Hq & Hq Co, Comm Recon Bn (2)
32-57R, Comm Recon Opr Co (2)
32-500R, Comm Recon Org (2)
44-125R, AAA Bn, AW, SmbL (2)
44-126R, Hq & Hq Btry, AAA Bn, AW, SmbL (2)
44-276R, Hq & Hq Btry, Abn AAA Bn, AW (2)
44-277R, Abn AAA Btry, AW (2)

NG: State AG (6); units—same as Active Army except allowance is one copy to each unit.

USAR: None.

For explanation of abbreviations used, see SR 320-50-1.