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TRANSMITTER-RECEIVER, RADIO, NO 31, MK 2

TECHNICAL HANDBOOK - INSPECTION STANDARDS

INTRODUCTION

1. This regulation details the inspection standards to be observed during field inspection and after field or base repair.
2. Departure from these standards will not be permitted unless authorized by War Office or DEME of the overseas theatre concerned.
3. These standards cover the following aspects of inspection:-

- (a) **Field inspection schedule.** This details the standards to be observed when inspecting equipment in the hands of troops. The limits and tolerances quoted also will be observed as minimum field repair standards.
- (b) **Field inspection record.** This is for the use of an examiner when inspecting equipment in the hands of troops, or after field repair.
- (c) **Base inspection schedule.** To avoid repetition this schedule has been omitted. Where necessary, direct reference to equipment EMERs is included in the base inspection record.

- (d) **Base inspection record.** This details the standards to be observed during base repair and subsequent inspection of the equipment. The standards will apply to all base workshops, and will be used as a guide by other workshops engaged in repair, and during the inspection of depot stocks.

References

4. Tels A 619 - EMER specification for inspection standards, telecommunication equipment.
- Tels A 760 - Repainting of electronic equipment.
- Tels A 779 - General standard for the overhaul of electronic equipment.
- Tels F 380-389 - Transmitter-receiver, radio, No 31, Pt 2.
- Tels F 368 - Transmitter-receiver, radio, No 31, Inspection standards.

FIELD INSPECTION SCHEDULE

Introduction

5. This part of the inspection standard is to be used when inspecting equipment in the hands of troops. The field inspection record gives the condemnation limits beyond which the equipment will not carry out its task efficiently. Using these condemnation limits as the standard, examiners should classify the equipment in accordance with the latest ACI. When the equipment is serviceable but barely satisfies the minimum standards in the field inspection record, the symbol '0' must be used to indicate that the equipment should be kept under observation with facilities available to the unit. If facilities are not available to the unit the equipment may have to be downgraded. In borderline cases, particularly where quantitative measurements are not given, the final assessment must be based on the examiner's experience and judgment using this standard as a guide.

General condition

6. The equipment and all accessories will be inspected for general cleanliness and will be free from moisture and fungoid growth.
7. Paintwork will be inspected for cracking, chipping or flaking. It must be borne in mind, however, that whilst good external appearance of any equipment is important in encouraging proper care and handling by the user in service, some degradation of the finish is certain to occur and unless this is extensive or serious it should not be taken as the criterion for a repairable classification. Uniformity of colour where patch painting has been carried out need not be considered.
8. All components and controls will be securely mounted, sealing gaskets will be in good condition.

9. Accessories and station spares will be complete and serviceable.
10. All outstanding modifications will be recorded.

Electrical tests

11. The electrical tests are detailed in the field inspection record. Test conditions are detailed in Tels F 384 para 6.

Test equipment

12. The following test equipment will be required:-
Signal generator, No 13 (SG No 13), (including matching pad, Tels F 384 Fig 4002).
* Wattmeter, absorption, a. f., No 1, (Watt AF1)
* Wattmeter, absorption, h. f., No 2, (Watt HF2)
* Voltmeter, valve, No 3 (VV 3) (including dummy load, Tels F 384, Fig 4001)

Note: * For suitable alternative see Tels F 384, para 4

FIELD INSPECTION RECORD

Item	Test	Specification limits			Result
		Min	Max	Unit	
General					
1	Cleanliness				
2	Paintwork				
3	Components				
4	Station list items				
5	Modifications				
Calibration (Tels F 368, para 6, item 7)					
6	Calibration error, thickness of dial marking				
7	Operate dial lock, frequency error	-	1	kc/s	
Receiver sensitivity (Tels F 384, para 8, serial No 3)					
SG No 13 input, via matching pad, for 20dB quieting					
8	Channel 1	-	7.7	µV	
9	Channel 20	-	7.7	µV	
10	Channel 39	-	7.7	µV	
Sender power output (Tels F 384 para 9 serial No 1)					
11	R.F. output at all channels or 2.8V across dummy load	0.2	-	W	
Functional tests					
Quarter wave aerial fitted					
12	Normal sidetone				
13	Volume control not noisy				
14	CALIBRATION button pressed: noise disappears and normal beat note occurs at CAL points				

BASE INSPECTION RECORD

13. Details of test equipment, accessories and test conditions are contained in Tels F 384 para 4-6.

Item	Test	Specification limits			Result
		Min	Max	Unit	
1	General condition In accordance with Tels A 779				
	ELECTRICAL TESTS The electrical tests will be carried out at normal supply voltages (4.0V 85V and 140V) unless stated otherwise				
	Current consumption (Tels F 383, page 2, Table 1)				
2	L.T. (4.0V) Receive	-	250	mA	
	Send	-	450	mA	
	H.T. (85V) Receive	-	28	mA	
	Send	-	25	mA	
	H.T. (140V) Receive	-	0.7	mA	
	Send	-	45	mA	
	Meter socket voltages				
3	Set transmitting at 44Mc/s (Tels F 382, page 1006, Table 2002)				
	Socket 1	-2.5	-	V	
	Socket 2	-8	-	V	
	Socket 3	-15	-	V	
	Socket 4	-17	-	V	
	Socket 5	-10	-	V	
	Socket 6	-20	-	V	
	Socket 7	-	±0.4	V	
4	No input, with set on receive (Tels F 384, para 7, serial No 8)				
	Socket 7 over entire band	-	±1.0	V	
	I.F. sensitivity (Tels F 384, para 8, serial No 1)				
5	Input at 4.3Mc/s to V7 grid to produce 10V at socket 3	-	45	µV	
	I.F. selectivity (Tels F 384, para 8, serial No 2)				
6	Bandwidth at 6dB	30	-	kc/s	
	Audio response (Tels F 384, para 8, serial No 5)				
7	B.F.O. output 3V (4th tag)				
	500c/s a.f. output	2	-	mW	
	2500c/s a.f. output	2	-	mW	
	3000c/s a.f. output, with reference to that at 2500c/s, will fall by a ratio of	6	-	dB	
	Calibration (Tels F 368, para 6, item No 7)				
	Set in drilled case				
8	Calibration error, 1/2 thickness of dial marking				

Item	Test	Specification Limits			Result
		Min	Max	Unit	
9	Valve voltmeter reading, socket 7 with SG 13 input 1mV at channel frequency, dial adjusted to channel				
	Channel 0	-	±1	V	
	Channel 5	-	±1	V	
	Channel 10	-	±1	V	
	Channel 15	-	±1	V	
	Channel 20	-	±1	V	
	Channel 25	-	±1	V	
	Channel 30	-	±1	V	
	Channel 35	-	±1	V	
	Channel 40	-	±1	V	
10	Tuning range beyond each end of scale	50	-	kc/s	
11	Operate dial lock, frequency error	-	zero	-	
	Receiver sensitivity (Tels F 384, para 8, serial No 3)				
12	SG No 13 input, via matching pad, for 20dB quieting				
	Channel 1	-	5.5	µV	
	Channel 20	-	5.5	µV	
	Channel 39	-	5.5	µV	
	Automatic frequency control (Tels F 384, para 8, serial No 4)				
13	A.F.C. shorted, h.t. 78V				
	Set and SG 13 tuned to channel 1. Detune SG 13 35kc/s either side of channel frequency				
	Noise quieting at +35kc/s	10	-	dB	
	Noise quieting at -35kc/s	10	-	dB	
	Sender power output (Tels F 384, para 9, serial No 1)				
14	R.F. output on all channels, Watt HF2 or using VV 3 and dummy load	0.3 3.5	-	W V	
15	R.F. output on all channels with reduced voltages ie 3.6V, 66V and 110V or using VV 3 and dummy load	0.05 1.4	-	WW V	
	Deviation (Tels F 384, para 9, serial No 2)				
16	On channel 20. Input for 10kc/s deviation at 1000c/s	-	0.2	V	
	Functional tests				
	Quarter-wave aerial fitted				
17	Normal side tone will be present on send				
18	Volume control not noisy				
19	CALIB button pressed: noise disappears and normal beat note occurs at CAL points				

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END