WIRELESS SET NO. 19, MK. II

DATA SUMMARY

PURPOSE

Primarily used as 'A' vehicle communication set, but also used as ground station; remote control over ½ mile of line, using Remote control unit 'E'.

DESCRIPTION

The set comprises three main units :—

(a) A set—Sender-receiver providing : R/T, M.C.W. and C.W. communication between troop and base and inter-troop.

(b) B set—U.H.F. transceiver for inter-tank communication.

(c) I.C. amplifier—Inter-crew communication.

PHYSICAL DATA

	Weight	Length	Height	Depth
Wireless set No. 19 :	40 lb.	17 in.	8 in.	12½ in.
Supply unit :	25 lb.	6 in.	8 in.	12½ in.
Aerial variometer :	5 lb.	10 in.	cylinder of 5 in. diam.	

FREQUENCY

A set 2.1 — 4.5 Mc/s, 4.5 — 8 Mc/s.

B set 229 — 241 Mc/s (approx.).

Intermediate frequency (A set ~~466~~ 463—467 kc/s (nominal 465 kc/s))

PERFORMANCE

A set Sender : Output stage, dissipation on R/T, approx. 12 W.

Receiver : Max. undistorted output, 200 m W.

Range : Using 8 ft. rod aerial on R/T and M.C.W., approx. 10 miles; on C.W., approx. 15 miles.

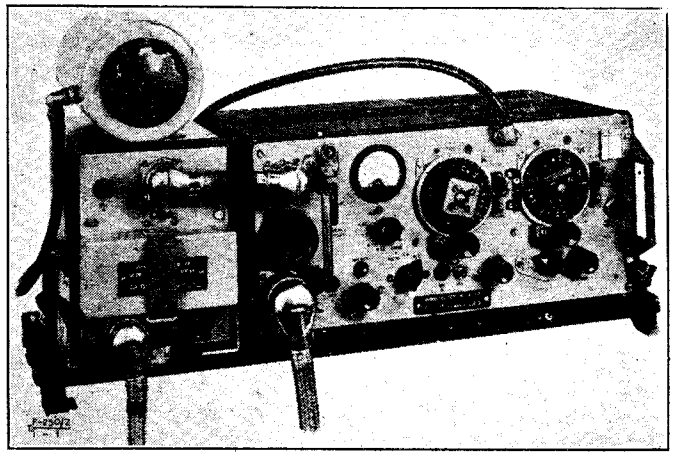

Fig. 1—General view of equipment

PERFORMANCE (*Contd.*)

B set Sender : Output stage dissipation, approx. 3 W.
Receiver : Max. undistorted output, approx. 200 m W.
Range : Approx. 1 mile, using ½wave aerial.

I.C. amplifier : Max. undistorted output, approx. 500 m W.

POWER SUPPLY AND CONSUMPTION

L.T. 12 V accumulator (negative) earthed. Facilities for 12—0—12 V supply from a 24 V installation.

H.T. Rotary transformer developing 500 V, and 275 V driven from 12 V accumulator.

A set	*B set*	*I.C. amplifier*	*Current taken from 12 V accumulator*
Receive	Off	Off	7.0 A
Send R/T	,,	,,	7.8 A
Receive	,,	On	8.4 A
Send R/T	,,	,,	9.2 A
Receive	Receive	,,	8.9 A
Send R/T	,,	,,	9.7 A
Receive	Send	,,	9.5 A
Send R/T	,,	,,	10.3 A
Send C. W.	,,	,,	11.4 A

AERIAL LINE SYSTEM

A set : Uses 8 ft. — 12 ft. rod aerials. When only short-range communication is required, a single 4 ft. aerial can be used. If greater range is required, a horizontal aerial can be used.

B set : Half-wave rod aerial.

Circuit ref.	*Type*	*Function*	
		Sender	*Receiver*
A Set			
V 1A	6K7G	Not used	R.F. amplifier
V 2A	6K8G	Tapping from oscillator section (triode) to master oscillator	Oscillator mixer
V 1B	6K7G	Not used	I.F. amplifier
V 1C	6K7G	Not used	I.F. amplifier
V 3A	6B8G	On send, pentode section becomes R/T or M.C.W. modulator	2nd detector, A.V.C. rectifier and L.F. amplifier
V 2B	6K8G	Oscillator — mixer type master oscillator	At receive, the oscillator section (triode) becomes C. W beat oscillator
V 5A	ARP 35 (EF 50)	R.F. amplifier driver	Not used
V 6A	ARDD 5 (EF 34)	Automatic drive control rectifier	Not used
V 4A	ATS 25 (807)	Power amplifier	Not used
B Set			
V 7A	C V6	V.H.F. oscillator	Super - regenerative detector
V 1D	6K7G	Not used	Quench oscillator
V 1E	6K7G	Modulation pre-amplifier	A.F. amplifier
V 8A	6V6G	Modulator	A.F. output
I.C. Set			
V 1F	6K7G	1st A.F. amplifier	
V 8B	6V6G	Output amplifier	

Table 1—Valve data.

END

WIRELESS SET NO. 19, MK. III

DATA SUMMARY

PURPOSE

1. Primarily used as 'A' vehicle communication set, but also as ground station; remote control working over ½ mile of line, using Remote control unit 'E'.

TYPES AND FUNCTIONS

2. The set comprises three main units :—
   (a) A set : Sender-receiver giving R/T, C.W. and M.C.W. communication between troop and base or inter-troop.
   (b) B set : U.H.F. transceiver for R.T inter-tank communication.
   (c) I.C. amplifier : Inter-crew communication.

PHYSICAL DATA

	Weight	Length	Height	Depth
Set No. 19 (with grille)	40 lb.	17½ in.	9 in.	13 in.
Supply unit (with grille)	25 lb.	6 in.	9 in.	13 in.
Aerial variometer	5 lb.	10 in. cylinder of 5 in. dia.		

FREQUENCY

3. Coverage : A set, 2—4.5 Mc/s, 4.5—8 Mc/s.
   B set, approx. 229—241 Mc/s, nominal 235 Mc/s.
   Intermediate : A set, 463—467 kc/s, nominal 465 kc/s.

PERFORMANCE

4. A sender : R/T : 5 W.
   C.W. : 10 W.
   A receiver : 12 μV for 50 m W output at 400 c/s modulation and signal/noise ratio of 20 db.
   A set range : With 8 ft. rod aerial, R/T and M.C.W., approx. 10 miles ; C.W., approx. 15 miles.

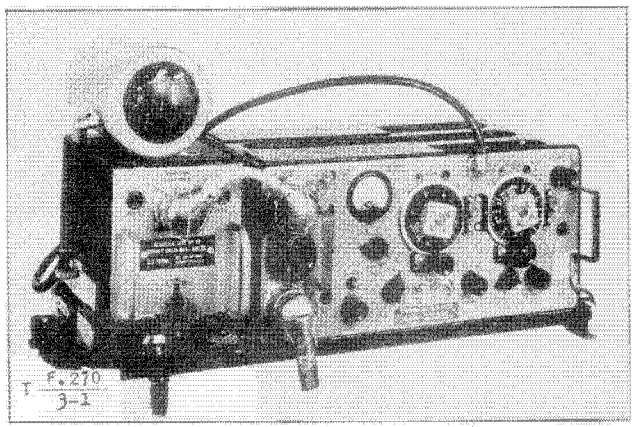

Fig. 1—View of front panel

PERFORMANCE (contd.)

B sender : Output stage dissipation on R/T, approx. 0.4 W.

B receiver : Approx. 50 m W output at 400 c/s modulation.

B Set range : Approx. 1 mile with $\frac{1}{4}$ wavelength aerial.

I.C. amplifier : Max. undistorted output, 500 m W.

POWER SUPPLY AND CONSUMPTION

5. L.T. 12 V accumulator (negative earthed). Facilities provided for 12—0—12 supply from 24 V installation.

H.T. Rotary transformer developing 275 500 V with input from 12 V accumulator.

A set	B set	I.C. amplifier	Current taken from 12 V accumulator
Receive	Off	Off	4.6 A
Receive	Receive	Off	6.4 A
Receive	Receive	On	7.1 A
Send	Send	On	10.7 A
All on,	25W on send		8.0 A

Table 1—Current taken from 12 V accumulator

AERIAL SYSTEM

A set : Uses 8 ft.—12 ft. rod aerials. Single 4 ft. rod when short-range communication required. Greater range can be obtained using horizontal wire aerial.

B set : Half-wave rod aerial.

Circuit ref.	Type	Function	
		Sender	Receiver
A set			
V1A	6K7G	Not used	R.F. amplifier
V2A	6K8G	Master oscillator (triode)	Frequency changer
V1B	6K7G	Not used	1st I.F. amplifier
V1C	6K7G	Not used	2nd I.F. amplifier
V3A	6B8G	Microphone amplifier M.C.W. audio oscillator	Signal detector, A.V.C. rectifier A.F. amplifier
V2B	6K8G	Frequency changer	C.W. beat oscillator (triode)
V5A	ARP35 (EF50)	Drive amplifier	Not used
V6A	ARDD5 (EB34)	Drive A.G.C. rectifier	Not used
V4A	ATS25 (807)	Power amplifier	Not used
B set			
V7A	CV6	U.H.F. oscillator	Super-regenerative detector
V1D	6K7G	Not used	Quench oscillator
V1E	6K7G	Microphone pre-amplifier	A.F. amplifier
V8A	6V6G	Modulator	A.F. outputt
I.C. set			
V1F	6K7G	A.F. amplifier	
V8B	6V6G	A.F. output	

Table 2—Types of valve used in various stages

END

*This issue replaces Issue 2, dated 11th July, 1944 Paras. marked with a star * have been amended.*