AIR PUBLICATION 116D-0116-1 ARI. 23143 U.H.F./V.H.F. TRANSMITTER-RECEIVER (PLESSEY PTR.175)

GENERAL AND TECHNICAL INFORMATION

BY COMMAND OF THE DEFENCE COUNCIL



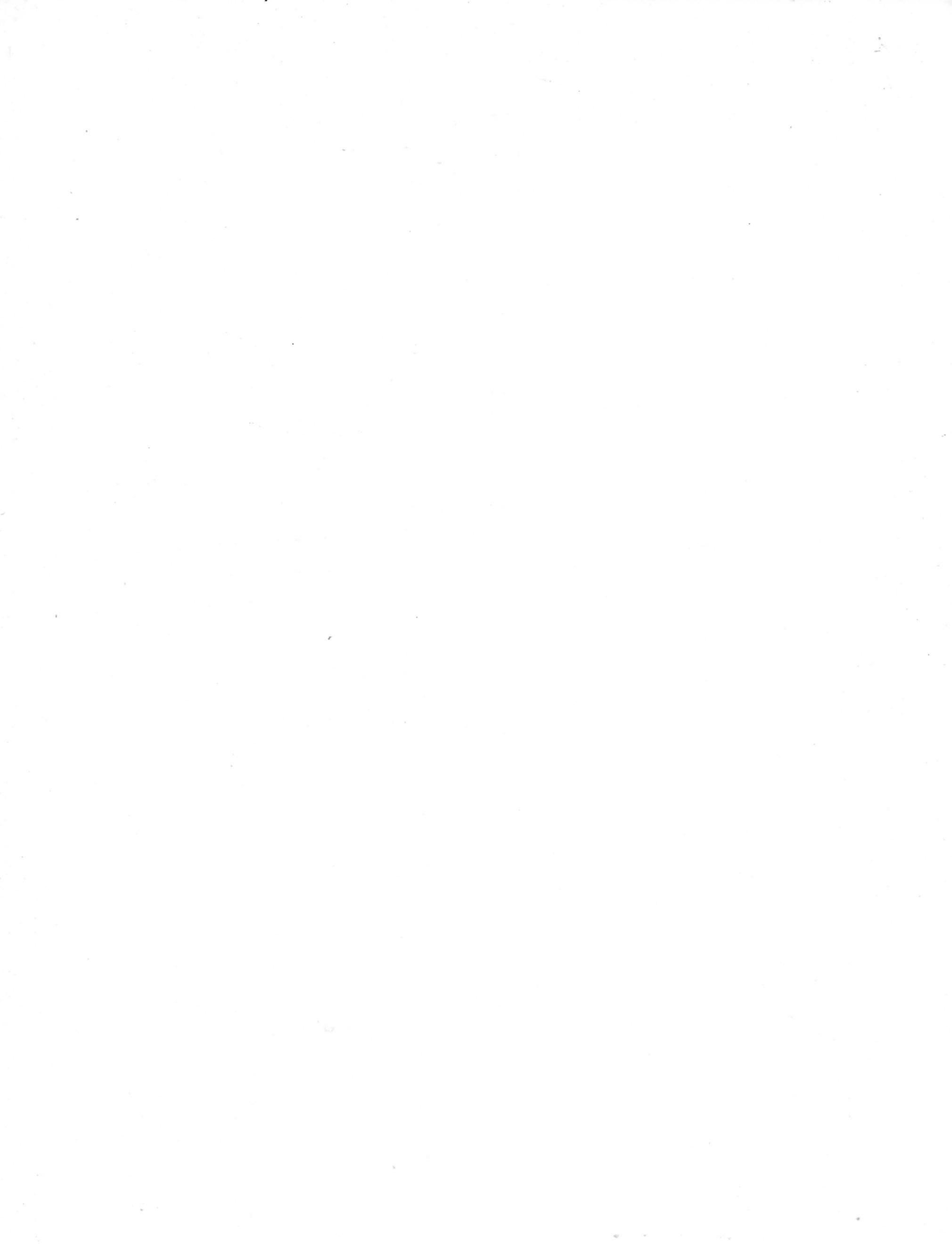
Ministry of Defence

FOR USE IN THE

ROYAL AIR FORCE

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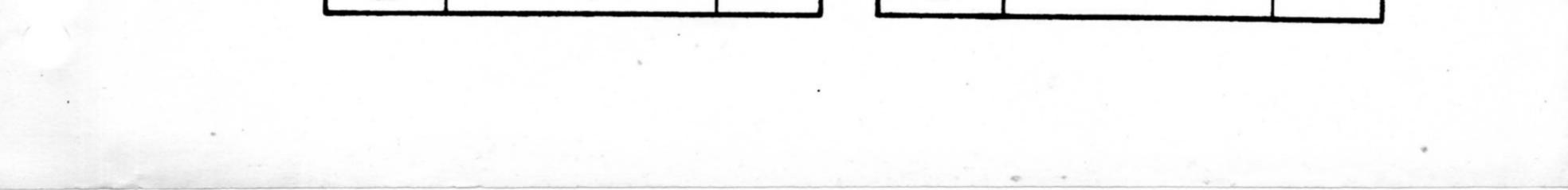


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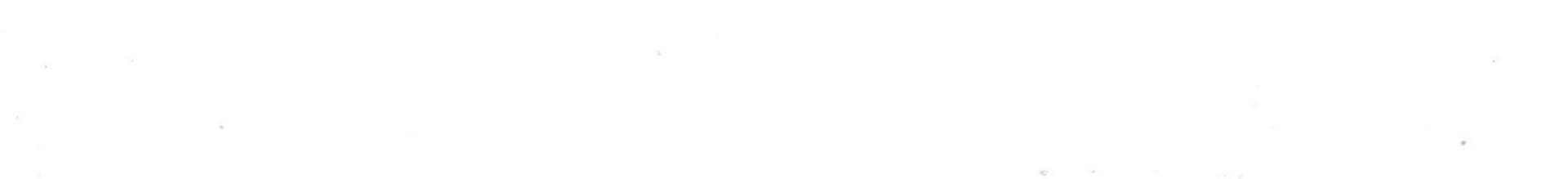
AMENDMENT RECORD SHEET

To record the incorporation of an Amendment List in this publication, sign against the appropriate A.L.No. and insert the date of incorporation

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2 Theory of operation

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ASSOCIATED PUBLICATIONS

ARI.18124 series and ARI.23182 U.H.F. transmitter-	A.P. 116D-0105-1
receiver ARC52	(2nd Edn.)
ARI.23141 U.H.F./V.H.F. transmitter-receiver (Plessey	
PTR177)	116D-0134-1
ARI.23199 U.H.F./V.H.F. transmitter-receiver (Plessey	
PTR374)	116D-0129-1
U.H.F. transmitter-receivers (ARC52 and derivatives)	
Module assemblies and ancillaries	116D-0133-1A
Special test equipment for second-line-servicing	116D-0133-1B
Servicing diagrams manual	116D-0133-10
Test set (U.H.F.) Type 15056	117M-0101-1
U.H.F. Ground installations FGR1.23065	116E-0102-1
ILHE Mobile installations MCD122072	116E 0101 1

U.H.F. Mobile installations MGRI.23073 ... \dots 116E-0101-1 U.H.F. Transportable installations TGRI(AT)26005 ... 116K-0402-1



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LEADING PARTICULARS

Note . . .

The following details are equally applicable to the PTR175 and PTR175A, except where otherwise stated. All levels are e.m.f. values from a 50-ohm, source, unless otherwise stated.

General

Function

Multi-channel R/T transmitter-receiver ... for simplex communication between aircraft and base and also between aircraft in flight.

Facilities are included for automatic selection of any one of 19 preset frequencies (including the guard frequency) and manual selection of any one of the available channels.

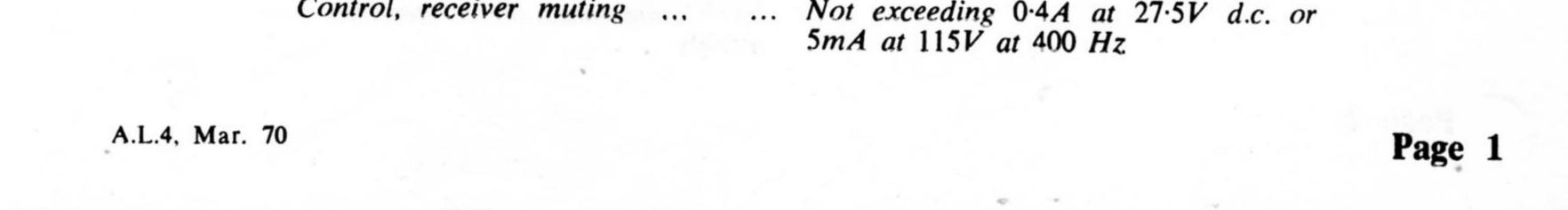
M.C.W. is available for emergency and direction finding purposes.

The transmitter-receiver incorporates facilities for use with automatic direction finding equipment.

Airborne relay facilities can be made available using an identical transmitterreceiver.

The equipment can be used for intercommunication between aircraft crew members

			members.
Range			Optical range at ground or sea level; 100 miles at 20,000 feet; 200 miles or more at 50,000 feet.
Frequency bands			V.H.F. 117.5 MHz-135.95 MHz U.H.F. 225 MHz-399.95 MHz
Frequency control			Crystal
Frequency stability (trans		and	
receiver)	••••		$\dots \qquad \dots \qquad \dots \qquad V.H.F. \pm 6 kHz$ $\dots \qquad \dots \qquad \dots \qquad U.H.F. \pm 7.5 kHz$
Frequency channels			V.H.F. 370 at 50 kHz intervals; U.H.F. 3500 at 50 kHz intervals.
Preset channels			18 plus guard
Guard receiver frequency	, band		238.0 MHz-248.0 MHz
Intermediate frequencies			20 MHz-29.95 MHz, 1.8 MHz or 1.85 MHz and 500 kHz
Temperature limits			$-55^{\circ}C$ to $+55^{\circ}C$
Supply voltages and appr	oximate	DO	wer consumption
PTR175A			$\begin{array}{rcl} 27 \cdot 5V & \text{d.c.} & u.h.f. & v.h.f.\\ Receive & 30 \cdot 25W & 33W\\ Transmit & 41 \cdot 5W & 44W\\ Channel \ change & 206W & 206W \end{array}$
			115/200V, 400 Hz, 3-phase a.c. (phase to neutral)
			u.h.f. v.h.f. Receive 275VA 275VA Transmit 430VA 380VA Channel change 275VA 275VA
PTR175			27.5Vd.c.u.h.f.v.h.f.Receive290W290WTransmit385W345WChannelchange415W



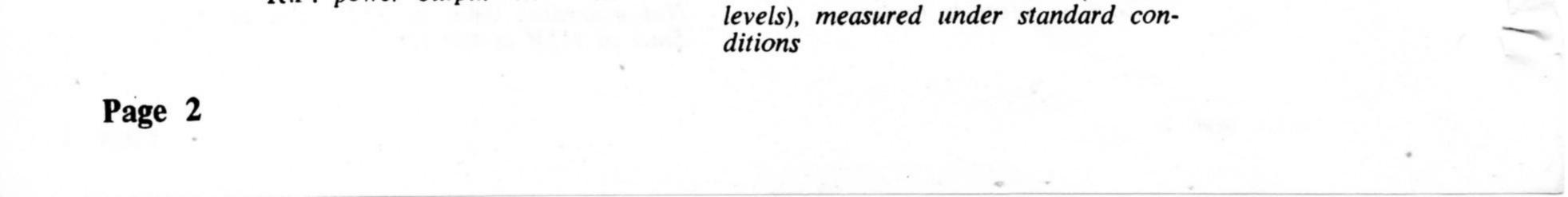
Channel selection time		6 seconds (approx.)
Transmit/receive time inter	rval •	300 milliseconds (maximum)
NATO Stock Nos.		
5821-99-971-1781		Transmitter-receiver, radio Type PTR 175
5821-99-971-1778		Transmitter-receiver, radio Type PTR 175A
5821-99-942-8544		Tray, mounting, transmitter-receiver, radio, Type MT1477/ARC52
5821-99-932-6361		Interconnecting box
5821-99-943-3247		Control, receiver muting
5821-99-945-5739		Control, radio set, Type C1607/4
◀ 5821-99-107-0030		Control, radio set, Type C1607/7
5821-99-223-8189		Control, radio set, Type C1607/9
Dimensions and weight (a	pprox.)	
T/R unit		Height Width Depth Weight 7_{16}^{3} in. $10_{\frac{1}{8}}^{1}$ in. 21 in. 50 lb.
Mounting tray		3 in. $11\frac{1}{4}$ in. 21 in. $3\frac{1}{4}$ lb.
Control unit		$5\frac{5}{8}$ in. $4\frac{7}{8}$ in. $5\frac{3}{4}$ in. $3\frac{1}{4}$ lb.
Interconnecting box		$2\frac{3}{4}$ in. $4\frac{3}{8}$ in. $6\frac{1}{8}$ in. $1\frac{1}{4}$ lb.
Control, receiver muting		$3 in.$ $3\frac{3}{4} in.$ $4\frac{3}{4} in.$ $1\frac{1}{4} lb.$
Aerials		Severate on dual hand garials may be

Receiver

t of $5\mu V$ (open circuit) % at 1000 Hz produces put of at least $50mW$
over the u.h.f. band and over the v.h.f. band.
V r.f. input signal modu-) Hz to 30% , the audio veen $107mW$ and $144mW$. A put remains within ± 3 level when the input is $10\mu V$ to $10mV$; also it in $\pm 5dB$ of this output e input is increased up to
50 ohms (nominal)
or either 300 ohms or 500
Amplitude
dB from 300 Hz to 3000
Less than 10%
stantaneous peak limiting
mV (normally set at 125 1mV input modulated Hz
a 1mV input modulated Hz

Transmitter

R.F. power output U.H.F. 16W, V.H.F. 3.5W (nominal



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Output impedance	(r.f.)	 	50 orms (nominal)
Modulation	•••-	 •••	R/T not less than 80%, with a 1000 Hz signal at either:—
			1V e.m.f. for 82 ohms carbon micro- phone, or 25mV e.m.f. for 82 ohms dynamic microphone, or $fomV$ e.m.f. for for fo
Tone modulation		 	M.C.W. appropriately 80% to 100% from 920 Hz to 1120 Hz
Input impedance		 ••••	82 ohms (unbalanced) carbon micro- phone, or 200 ohms (balanced) dyna- mic microphone, or 82 ohms (balanced) dynamic micrphone
A.F. bandwidth		 	150 Hz to 20,000 Hz for u.h.f. recep- tion; 150 Hz to 10,000 Hz for v.h.f. reception
Sidetone		 	Alternative systems are available, viz:—
			(1) By rectified carrier (u.h.f. only)(2) From modulator
			Level 250mV when carrier is 80% modulated at 1000 Hz

