TMC Low Distortion Oscillator

26 April 2022

S.N.8559/1/31 . Marking: “Recorded 15/11/67”

TMC Ltd, Australia. T.M.C. PTY. LIMITED ACN 007598843 registered 13/4/1960, deregistered 4/7/1985

(Philips TMC appears to have no connection, and was just a shortened name for Philips Telecommunications Manufacturing Company taken on circa 1972)

Transformer may be a replacement, as many unused taps and rectifier output must be full-wave with choke input to provide 23Vdc raw supply, and the rear panel voltage selector was disabled. Otherwise unmodified. Part datecodes suggest circa 1967 manufacture.

Powered from AC or 24VDC or 48VDC. 30Hz to 30kHz in 3 ranges

dBm output meter into 600Ω unbalanced, 600Ω balanced, 40Ω. +20dBm into 600 ohm is 7.32Vrms

power transformer ORION EDT-3 7107

choke A1025-3 dipped with inspection mark; 2.5 ohm DCR; 356mH 25mAdc 1Vac; 234mH 85mAdc 4.4Vac; 165mH 188mAdc 4.7Vac.

Master Instruments 200uA 1000 ohm Model S34 meter

OC24 2R4 AY8104 2N3645 OA7 diode

AY6101 2N3638 BJTs with ferrite beads on legs

Colvern LTC CLV/YB wirewound 5K 1% dual pot (to minimise distortion from signal current)

IRC 500ohm 2W pot C7

IRC Australian 1% resistors

IRC PW5 65 28, 68 1

Bulb R14 18 PR

Caps Ducon 396 , 397, 396 Plessey XM76, XG 18

transistor drive transformer 29 22 24

Output transformer - interleaved windings

pcb – X12258 – also shows an inspection mark

Capacitor leakage testing:

68uF 15V C10 5.8uA 14.5V ok; 330uF 6V C9 4uA 6V ok; 330uF 6V C7 1uA 6V ok;

150uF 15V x2 C13 18uA (3+14u) 15V unsure; modern 330uF 35V 4uA replaced

6U8 35V C16 3.3uA 35V ok; 22uF 15V C18 2uA 15V ok;

2,200uF 50V modern 25uA 35V sus; Replacement 2200uF 50V unicon 7uA 35V ;

1000uF 25V 4.5uA 25V ok; 6,800uF 50V 43uA 50V ok;

Mods:

- Front panel LODOS Type B559/1 connector replaced by XLR connector (1: shield, 2: red; 3: white)
  - Shield is isolated from 2, 3, and connected to chassis.
  - 2,3 have 5.7nF capacitance to chassis/shield.

- My fault caused high dissipation through 107 and 26.4R resistors – replaced.
- 0.22uF cap added across full-wave rectifier output to suppress noise.

Amp output has relatively low distortion across all output settings except distortion rises rapidly above -2 to -1dBm scale (depends on frequency) on the +10dBm level setting (perhaps clipping/overload in ?), and somewhat rises on +20dBm level setting at high scale levels. HD is typically dominated by 2HD and mostly well below 0.1%.

0dBm scale, -20dB level, 0.153Vac, 600Ω unloaded ; 0.0814Vac, 40Ω unloaded.

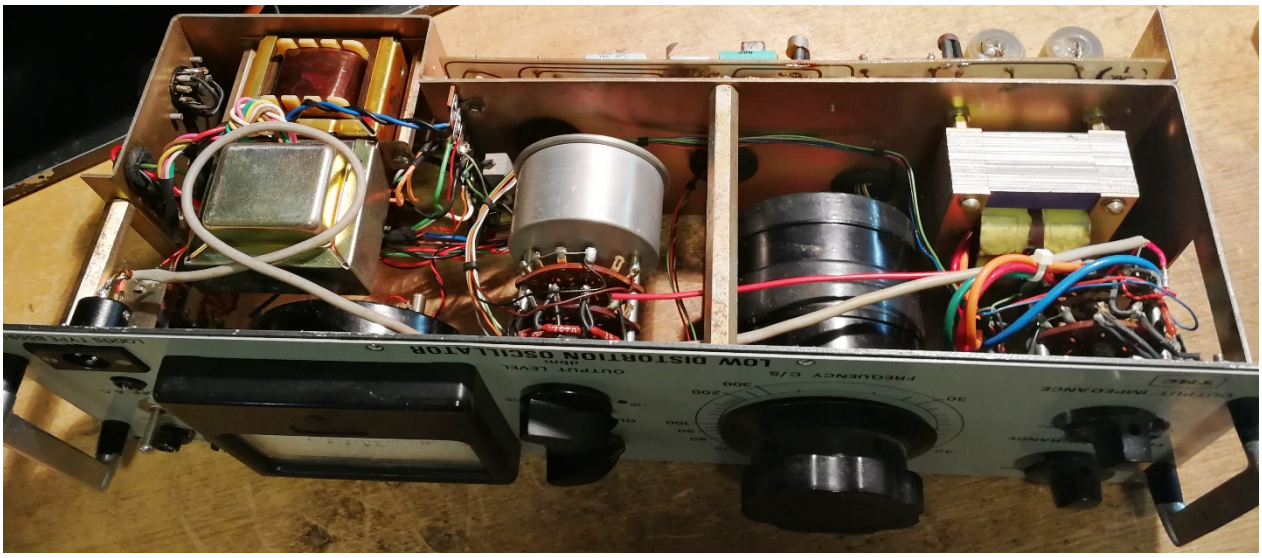
0dBm scale, -10dB level, 0.480Vac, 600Ω unloaded ; 0.256Vac, 40Ω unloaded.

0dBm scale, 0dB level, 1.53Vac, 600Ω unloaded ; 0.814Vac, 40Ω unloaded.

0dBm scale, +10dB level, 4.79Vac, 600Ω unloaded ; 2.56Vac, 40Ω unloaded.

0dBm scale, +20dB level, 15.07Vac, 600Ω unloaded ; 8.02Vac, 40Ω unloaded.

Max output to 600Ω unloaded is 19.0Vac; and 10.1Vac, 40Ω


LOW DISTORTION OSCILLATOR


ORION
7107

X1 X10 X100
BLU/WH OR/WH GRN/WH
7 8 9
1U 100N 10N
470
6
5K
2
470 1U 100N 10N
3 4 5
1
BLU OR GRN
X1 X10 X100
5K
11
BRN
10
-11.7V
15K
VT2 2N3646
VT3 2N3638
VT1 2N3638
-5.4V
12
1K5
-6.3V
16
330U 6V
3K
330U 6V
100
13
-0.3V
R14 18 PR
180
47
1N
3K3
680
220 5W
680
6V1
1000U 25V
ZD1
ZD2
12V OAZ230
47K
1K5
-21.5V
47N
-23V
42
VT5 AY6101
-20.95V
VT4 2N3638
VT6 OC24
-11.1V
-10.98V
20
1K
-11.2V
O/P
27
8K2
28
1K5
26
15V
68U
17
100
15
500
14
100
1N
-10.75V
18
11K
19
220
150U 15V
150U 15V
L1
100P
680
VT7 AY8104
6U8 35V
13K
220
22K
33
1K
29
30
12K
35
O/P
31
34
1N3067 D2
S34 METER
22U 15V
OA7 D1
41
32
43
29 22 24
200uA FSD 1kohm
1130
O/P
340
21
107
2200U 50V
26.4
18
22
23
330
24
25
82N
O/P Level Shielded Wafer Switch:
-20dBm 0R; -10dB 0R; 0dB 12R; +10dB 82R; +20dBm open
XLR
RD
600R unbalanced not shown
12/82
RED
3N3
BLK
Shielded O/P Level
GRY
3N3
GRN
12/82
220P
OR
BLU
WH

-24VDC
-48VDC
10
20V OAZ235
0VDC
Power
39
3AG 0.5A
A1025 350mH 25mA
-23V
6800U 50V
470 5W
3AG 0.5A
A.C.
ORION EDT-3
OR
36
38
28V 10R
RED
89R
BLK
BLU
28V 10R
OR
240VAC MAINS
Power

RED
BLK
GRN
GRY
3N3
OR
BLU
82
82
0/0/12/82/open
0/0/12/82/open
0/0/12/82/open
XLR
WH
RD
40R switch setting (-20/-10/0/+10/+20dBm)

480
RED
BLK
GRN
GRY
3N3
3N3
OR
BLU
82
0/0/12/82/open
82
0/0/12/82/open
XLR
WH
RD
600R bal switch setting (-20/-10/0/+10/+20dBm)

Title	TMC LOW DISTORTION OSCILLATOR	
Size A4	Number	Revision
Date: 26-Apr-2022		Sheet of
File: C:\Program Files\Design Explorer 99 SE\Examples\Projects\Amplifier Modules.ddb		Drawn By:

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