REPORT ON

Limited Testing of the McMurdo Limited 406 MHz Fastfind Plus PLB with internal GPS position encoded data and 121.5 MHz Radio locating device using -20°C battery pack in accordance with C/S T.007 - Issue 3 - Revision 7 October 2000

Report Number RM608623 October 2001

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Report No. RM608623

PREPARED FOR

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APPROVED BY

M JENKINS
Wireless Telecoms Group Manager

DISTRIBUTION

McMurdo Ltd	Mr R Read	Copy No. 1
COSPAS-SARSAT Secretariat		Copy No. 2
BABT		Copy No. 3

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For copyright details see page 13 of 13

Manufacturer:	McMurdo Ltd
Type Designation:	Fastfind Plus
Serial No.:	3
Number of Samples Tested:	One
Test Specification:	C/S T.007 Issue 3 – Revision 7 October 2000
Date of Receipt of Test Sample:	1st October 2001
Start of Test:	15th October 2001
Finish of Test:	16th October 2001
Test Engineer:	N Forsyth

TEST HOUSE DECLARATION

We, BABT of Segensworth Road, Titchfield, Fareham, Hampshire PO15 5RH, declare under our sole responsibility that the product :

Equipment :	406 MHz PLB with internal GPS position encoded data and 121.5 MHz radio locating data
Type :	-
Model :	Fastfind Plus
Serial Number :	3
Quantity :	One

to which this declaration relates is in conformity with the following standard(s) or other normative document(s) :

C/S T.007 - Issue 3 - Revision 7 October 2000
Clause 6.2.1

Detailed results are recorded in Test Report No. RM608623

Place and date of issue : Fareham, October 2001

Signature : _____

M JENKINS
Wireless Telecoms Group Manager

Date : _____

This report should be read in conjunction with Reports No RM608213 and RM608213B which cover Full Type Approval Testing of the McMurdo Limited 406 MHz Fastfind Plus PLB with internal GPS position encoded data and 121.5 MHz Radio locating device in accordance with C/S T.007 - Issue 3 - Revision 7 October 2000 and Limited Testing with the -20°C battery pack.

APPLICATION FOR A COSPAS-SARSAT 406 MHz
BEACON TYPE APPROVAL CERTIFICATE

Beacon Manufacturer : McMurdo Ltd

Beacon Model : Fastfind Plus

Name and Location of Beacon Test Facility : BABT

Beacon Type : Aviation : [ ] Land : [✓] Maritime : [✓]

Specified Operating Temperature Range : -20°C to +55°C

Specified Operating Lifetime : 24 hr. [✓] 48 hr. [ ] Other [ ]
Specify :

Beacon Battery Type(s) : Chemistry : Lithium

Manufacture & Model No. : Energiser L-91

Size & number of cells : 7 x 'AA'

Extra Features in Beacon :	No	Yes	Details
a) Auxiliary Radio-Locating Device :	[ ]	[✓]	Frequency : 121.5 MHz Power : +25 mW Min Tx. Duty Cycle : 100%
b) Transmits Encoded Position Data :	[ ]	[✓]	Nav. Device Internal Type. GPS
c) Transmits Long Message (144 bits) :	[ ]	[✓]	
d) Automatic Activation :	[✓]	[ ]	
e) Built-in Strobe Light :	[✓]	[ ]	Intensity : Flash rate :
f) Self-test mode :	[ ]	[✓]	-
g) Other :	[✓]	[ ]	Specify :

I hereby confirm that the 406 MHz beacon described above has been successfully tested in accordance with the Cospas-Sarsat Type Approval Standard (C/S T.007) and complies with the Cospas-Sarsat Specification (C/S T.001) as demonstrated in the attached report.

Dated : 17-10-01 Signed :

(for test facility)

Ambient temperature.....23°C Relative humidity.....34%

Table 2: SUMMARY OF 406 MHz BEACON TEST RESULTS

PARAMETERS TO BE MEASURED DURING TESTS	RANGE OF SPECIFICATION	UNITS	TEST RESULTS	COMMENTS
10. OPERATING LIFETIME AT MINIMUM TEMPERATURE****				See plots on Pages 9-13
▪duration	>24	hours	24 hours at T_{min}=-20°C	
▪transmitted frequency:				
▪nominal value	406.023-406.027 or 406.027-406.029***	MHz	✓	
▪short-term stability	≤2 x 10^{-9}	/100 ms	✓	
▪medium-term stability:				
-slope	(-1 to +1) x 10^{-9}	/minute	✓	
-residual frequency variation	≤3 x 10^{-9}		✓	
▪transmitter power output	35-39	dBm	37.95	Pt_{EOL} after 24 hrs
▪digital message	must be correct	✓	✓	

Re-calculated values for $ERP_{max\ EOL}$ and $ERP_{min\ EOL}$ using data from BABT Test Report RM608213:

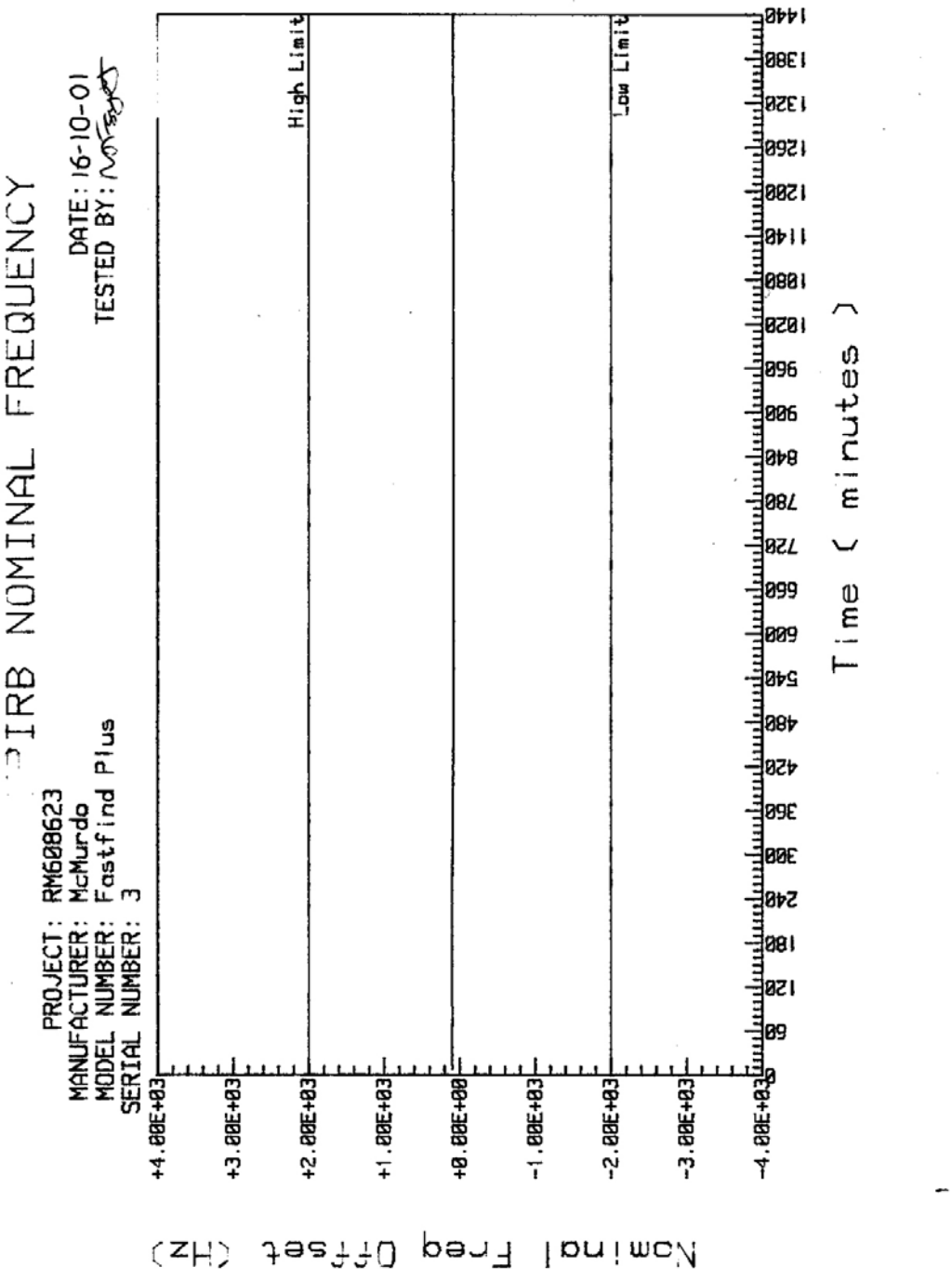
$ERP_{LOSS} = Pt_{ambient} - Pt_{EOL}$ = 37.89dBm – 37.95dBm = -0.06 dB

$ERP_{max\ EOL}$ = **MAX [** ERP_{max} **,** $(ERP_{max} - ERP_{LOSS})$ **]** = 41.80 dBm

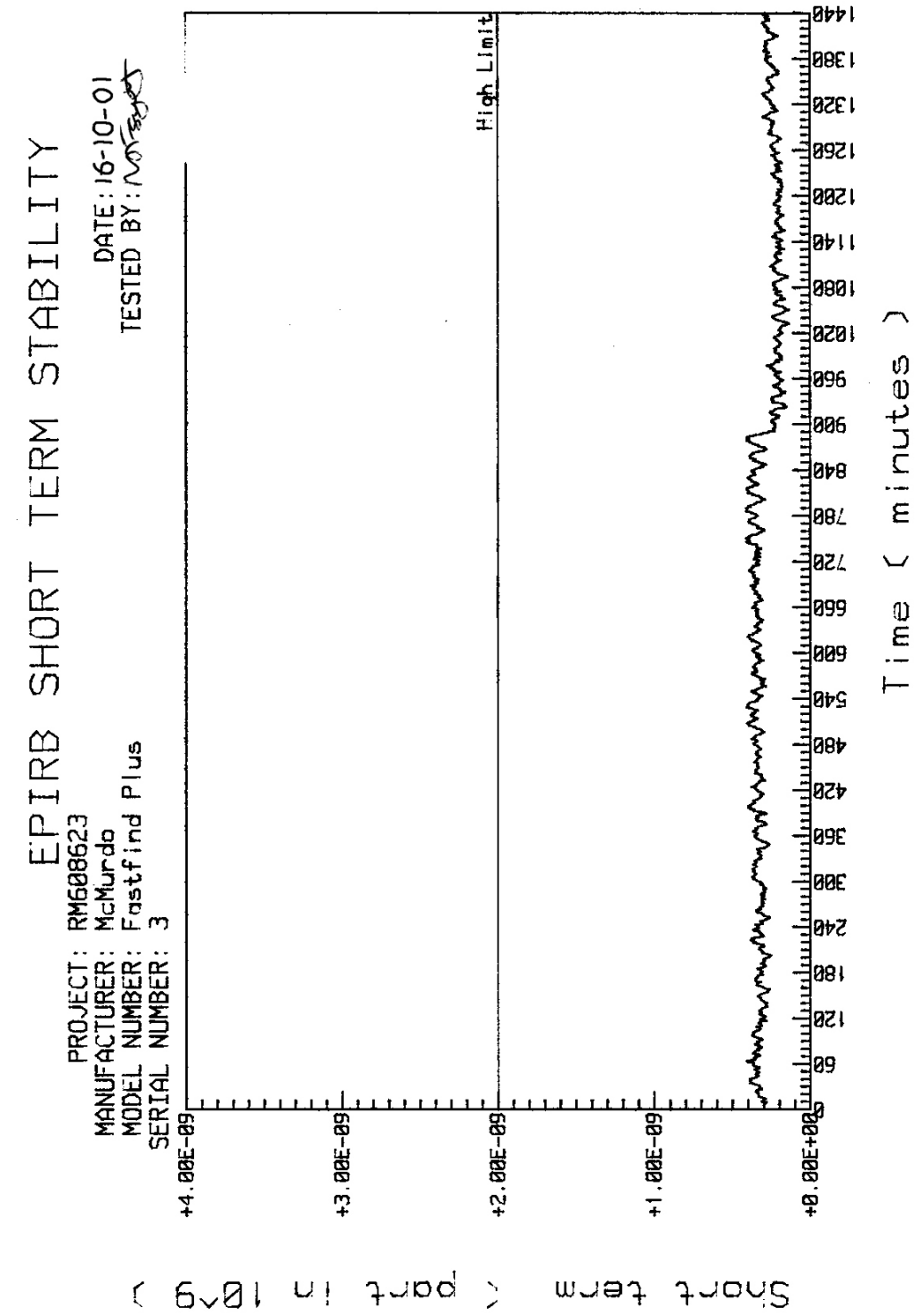
$ERP_{min\ EOL}$ = **MIN [** ERP_{min} **,** $(ERP_{min} - ERP_{LOSS})$ **]** = 33.84 dBm

TEST EQUIPMENT USED
1, 2, 3, 4, 5, 6, 7, 8, 9,10, 11
…….

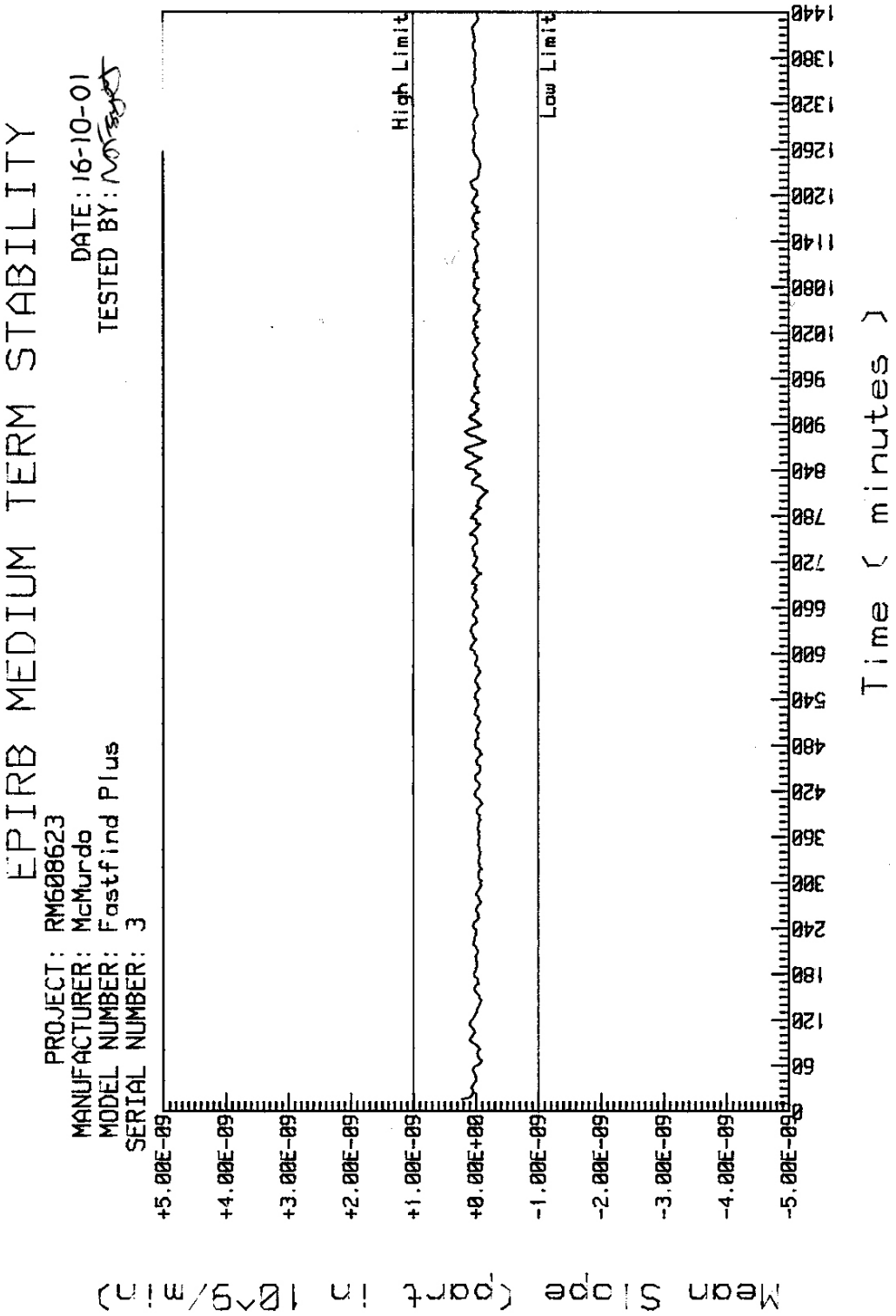
Operating Lifetime at Minimum Temperature – Nominal frequency



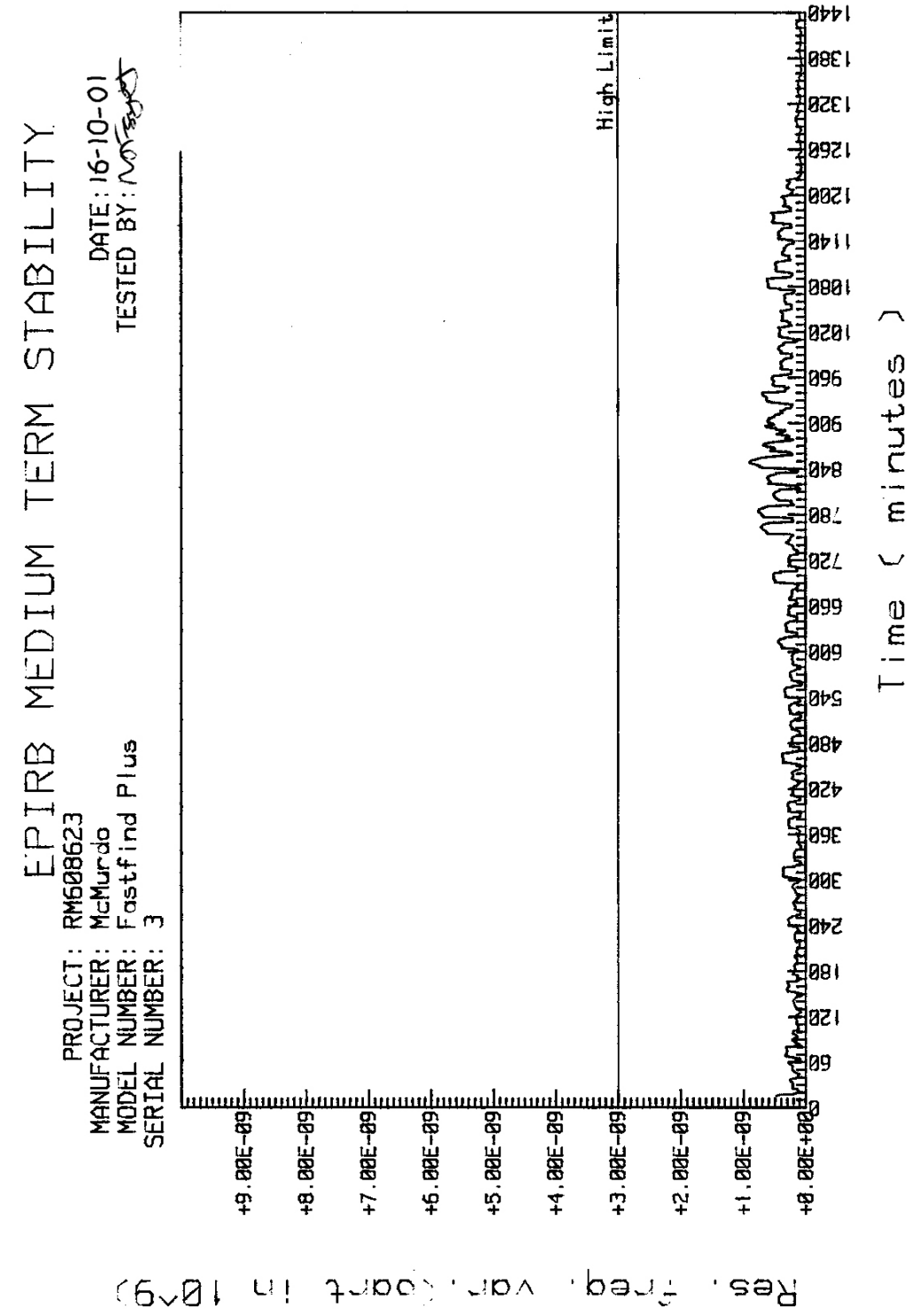
Operating Lifetime at Minimum Temperature – Short term stability



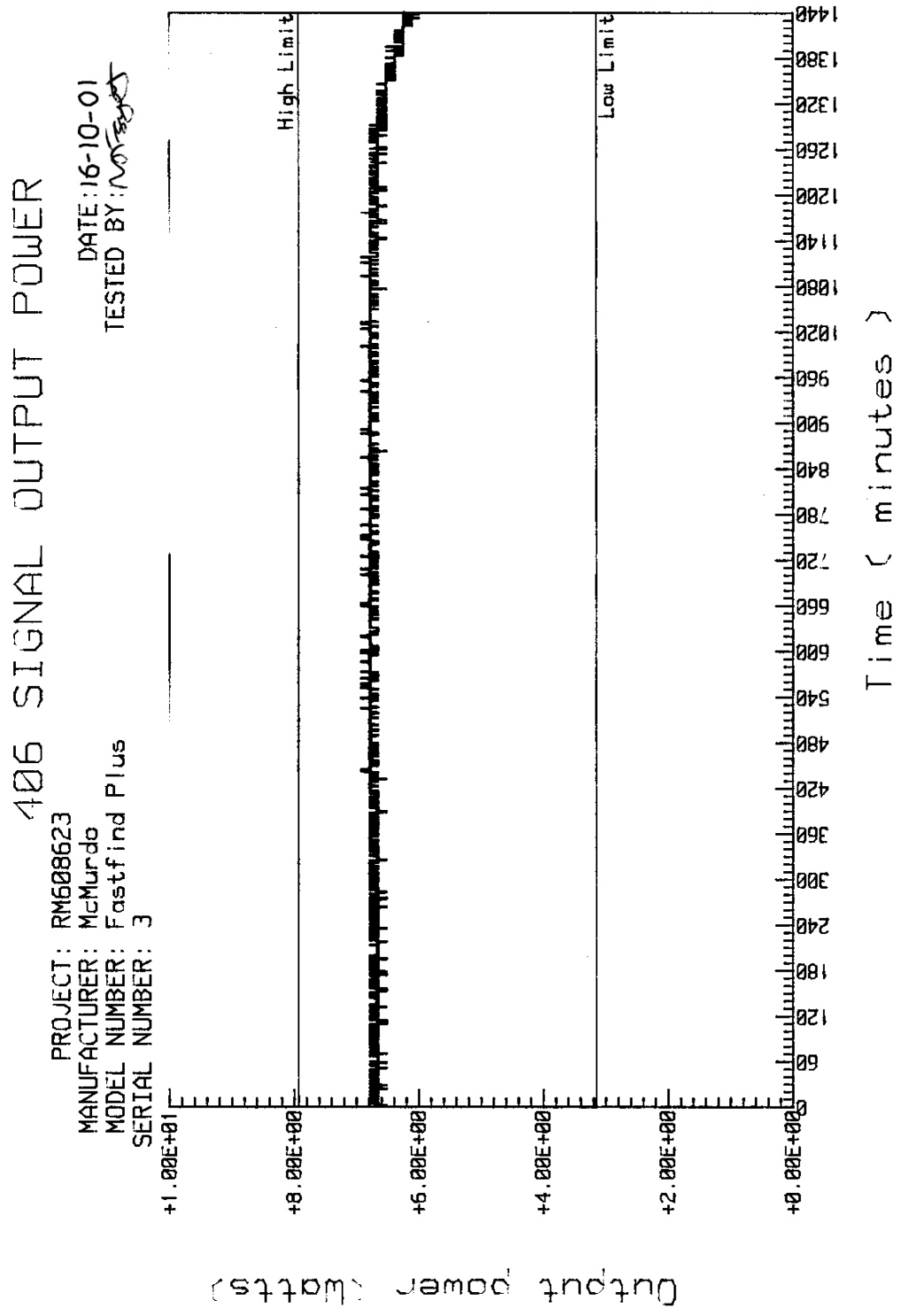
Operating Lifetime at Minimum Temperature – Medium term stability - Mean slope



Operating Lifetime at Minimum Temperature – Medium term stability – Residual frequency variation



Operating Lifetime at Minimum Temperature – Output power



TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

No	Instrument/Ancillary	Type	Manufacturer	Serial No.
1	Hygromer	A1	Rotronic	N/S
2	Freq & Time Interval Analyser	5372A	Hewlett Packard	3141A1073
3	Logic Analyser	1613D	Hewlett Packard	2713A62725
4	Signal Generator	SMX	Rohde & Schwarz	82737-002
5	10 dB Attenuator	47-10-34	Weinschel	AT 4937
6	10 dB Attenuator	HFP-50N	Texscan	N/S
7	3 dB Attenuator	HFP-50N	Texscan	N/S
8	Crystal Detector	8470B	Hewlett Packard	1822A15821
9	Mixer	M2TC	Watkins Johnson	050033
10	Low Pass Filter	WLJ 1.4C9EF	Wainwright	1
11	Environmental Chamber	MINI-P-MEGH-P	Montford	3369-K5707

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Group

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Results of tests not yet included in our UKAS Accreditation Schedule are marked NUA (Not UKAS Accredited).