

SERIAL # PL22445

TEST DATA SHEET

DATE 4-10-18

| REF. | NOMENCLATURE | VALUE | TOL | UNITS | +25° C |
|-------|---|--------------|----------|----------------|-------------------|
| SCOPE | ESS DATA | N/A | N/A | N/A | SEE ATTACHED DATA |
| 4.1 | Dimensions | N/A | N/A | N/A | PASS / FAIL |
| 4.2 | Marking | N/A | N/A | N/A | PASS / FAIL |
| 4.3 | DC Power @+/-15VDC | +500 | MAX | mA | +430 |
| | | -200 | | mA | -70 |
| 4.4 | Input VSWR | 2.0:1 | MAX | 1.354:1 | GRAPH 1 |
| 4.4 | Output VSWR | 2.0:1 | MAX | 1.178:1 | GRAPH 2 |
| 4.5 | Log linearity | N/A | +/-1.5 | +0.6 / -0.56dB | Graph 3 |
| 4.5 | Log slope | 55.5 | +/-5 % | 54.9-55.4mV/dB | Graph 3 |
| 4.5 | Absolute Log Video Output Voltage @-55dBm | 0.0 | +/-0.075 | V | -0.009 / + 0.011 |
| 4.5 | Average Log Video Output Voltage @ -55dBm | 0.0 | +/-0.05 | V | 0.0 |
| 4.5 | Average Log Video Output Voltage @ -10dBm | 2.5 | +/-0.05 | V | 2.456 |
| 4.5 | Flatness from -55 to -45dBm | 4.0 | p-p | dB | 0.8 |
| 4.5 | Flatness from -45 to -10dBm | 6.0 | p-p | dB | 0.7 |
| 4.6 | No Signal Output Voltage | -100 to -300 | N/A | mV | -141 |
| 4.7 | Log Video Output Rise Time | 20 | MAX | ns | 17.2 |



SIZE
A

CAGE CODE
71A34

DWG. NO.
28033900

REVISION A 1

SCALE

SHEET 16 OF 18

| | | | | | |
|------|-----------------------------------|-------|-----|-----|--------|
| 4.8 | Pulse Overshoot @ -10dBm | 138.7 | MAX | mV | 100 |
| 4.8 | Pulse Overshoot @ -35dBm | 55.5 | MAX | mV | 25 |
| 4.9 | Pulse Fall Time and Recovery Time | 50 | MAX | ns | 17 |
| 4.10 | Log Video Output Pulse Delay | 35 | MAX | ns | 25 |
| 4.11 | RF Saturated Output Power | +15 | MAX | dBm | +11.25 |

TESTED BY JM

QA *[Signature]*
4/12/18



SIZE
A

CAGE CODE
71A34

SCALE

DWG. NO.
28033900

REVISION A 1

SHEET 17 OF 18

Stimulus

Stop 4.900000000 GHz

Start

Stop

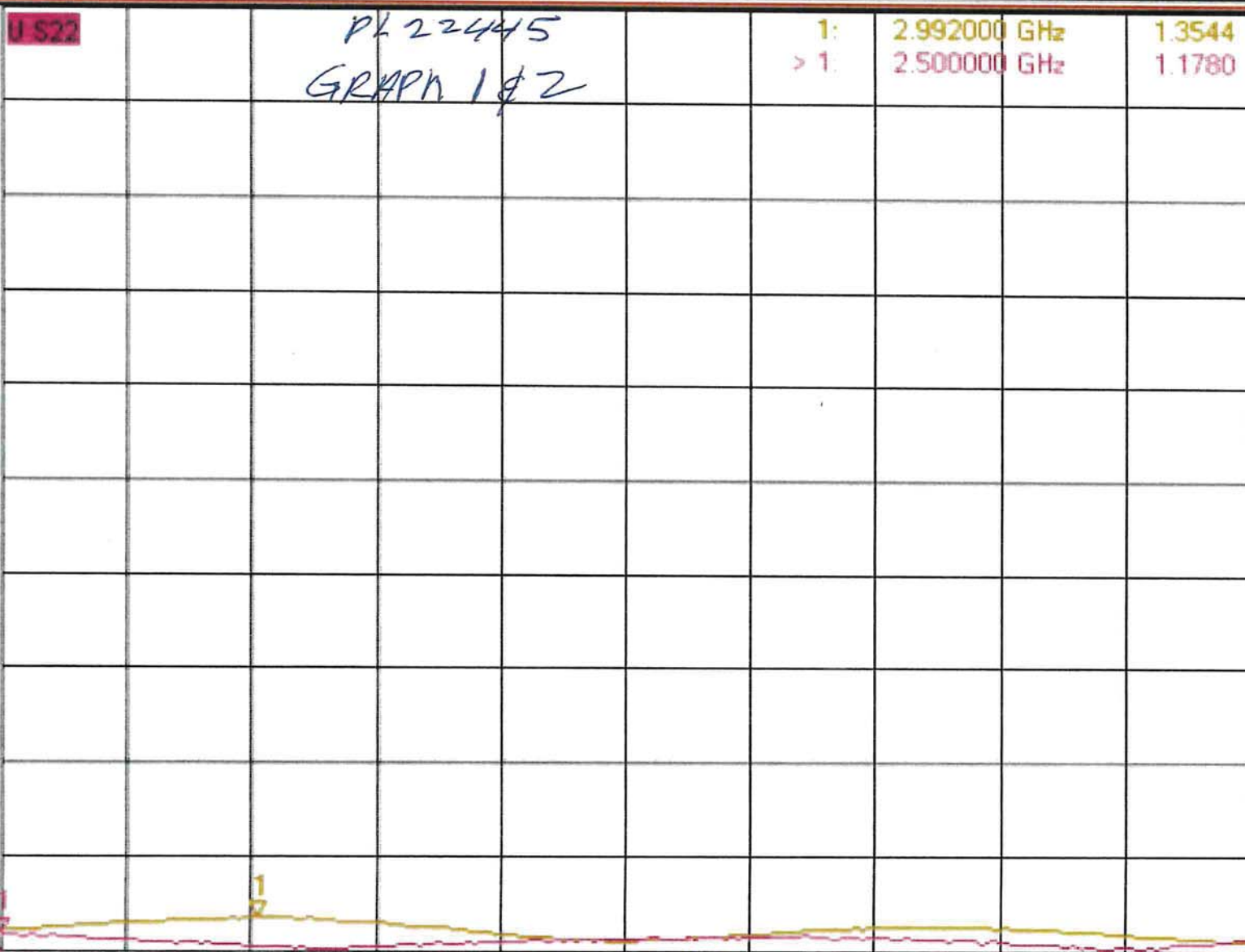
Center

Span

S11
1.000U/
1.00U SWR

S22
1.000U/
1.00U SWR

11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00



1: 2.992000 GHz 1.3544
> 1: 2.500000 GHz 1.1780

Cont.

CH 1: S22

C 2-Port

LCL

LOG TRANSFER WITH FREQUENCY
 MODEL: SDLVA-2D5G4D9G-45-55MV
 TESTED BY: JOHNM
 DATE: 3-10-18
 SERIAL NO: #PL22445
 Test Temp: +25C

GRAPH # 3



PLANAR MONOLITHICS INDUSTRIES
 4921 Robert J. Mathews Parkway, Suite 1
 El Dorado Hills, CA 95762
 Phone: 916-542-1401 Fax: 301-662-1731
 Email: sales@pmi-rf.com | www.pmi-

vos= -141mv

Frequency

| | | |
|---------|----------------|------|
| 2.5 GHz | INTERCEPT (mV) | 3013 |
| | SLOPE (mV/dB) | 54.9 |

| | | |
|---------|----------------|------|
| 2.9 GHz | INTERCEPT (mV) | 3012 |
| | SLOPE (mV/dB) | 54.9 |

| | | |
|---------|----------------|------|
| 3.3 GHz | INTERCEPT (mV) | 3016 |
| | SLOPE (mV/dB) | 55.1 |

| | | |
|---------|----------------|------|
| 3.7 GHz | INTERCEPT (mV) | 3037 |
| | SLOPE (mV/dB) | 55.4 |

| | | |
|---------|----------------|------|
| 4.1 GHz | INTERCEPT (mV) | 2995 |
| | SLOPE (mV/dB) | 54.9 |

| | | |
|---------|----------------|------|
| 4.5 GHz | INTERCEPT (mV) | 3029 |
| | SLOPE (mV/dB) | 55 |

| | | |
|---------|----------------|------|
| 4.9 GHz | INTERCEPT (mV) | 3024 |
| | SLOPE (mV/dB) | 55 |

Flatness +/-dB

| | |
|------------------|------|
| Slope Avg(mv/dB) | 55.0 |
| Slope Min(mv/dB) | 54.9 |
| Slope Max(mv/dB) | 55.4 |

| | |
|--------------------|--------|
| V Out Min @ -55dBm | -0.009 |
| V Out Max @ -55dBm | 0.011 |
| V Avg @ -55dBm | 0.000 |
| V Avg @ -10dBm | 2.452 |

| | | |
|-------------------------|------|----|
| Max Delta -55 to -45dBm | 0.82 | dB |
| Max Delta -45 to -10dBm | 1.33 | dB |

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| -55 | -50 | -45 | -40 | -35 | -30 | -25 | -20 | -15 | -10 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

| | | | | | | | | | |
|------|-------|------|------|------|-------|-------|------|------|------|
| -3 | 257 | 555 | 834 | 1094 | 1335 | 1621 | 1927 | 2200 | 2466 |
| 3 | -11 | 13 | 17 | 3 | -31 | -19 | 12 | 11 | 2 |
| 0.06 | -0.20 | 0.23 | 0.31 | 0.05 | -0.56 | -0.35 | 0.22 | 0.20 | 0.04 |

| | | | | | | | | | |
|------|-------|------|------|------|-------|-------|------|------|-------|
| -4 | 254 | 544 | 827 | 1099 | 1348 | 1634 | 1930 | 2194 | 2453 |
| 3 | -13 | 2 | 11 | 8 | -17 | -6 | 16 | 5 | -10 |
| 0.06 | -0.24 | 0.04 | 0.20 | 0.15 | -0.31 | -0.10 | 0.29 | 0.10 | -0.19 |

| | | | | | | | | | |
|------|-------|-------|------|------|------|------|------|-------|-------|
| -6 | 242 | 528 | 814 | 1099 | 1369 | 1649 | 1927 | 2186 | 2447 |
| 8 | -19 | -9 | 2 | 11 | 6 | 10 | 13 | -4 | -18 |
| 0.15 | -0.35 | -0.16 | 0.03 | 0.20 | 0.10 | 0.19 | 0.23 | -0.07 | -0.33 |

| | | | | | | | | | |
|------|-------|-------|-------|------|------|------|------|-------|-------|
| -2 | 255 | 535 | 818 | 1108 | 1384 | 1662 | 1939 | 2201 | 2469 |
| 7 | -13 | -10 | -4 | 10 | 9 | 10 | 10 | -5 | -14 |
| 0.13 | -0.23 | -0.17 | -0.06 | 0.17 | 0.16 | 0.18 | 0.18 | -0.09 | -0.25 |

| | | | | | | | | | |
|------|-------|-------|-------|------|------|------|------|-------|-------|
| -9 | 232 | 510 | 793 | 1082 | 1368 | 1641 | 1912 | 2165 | 2423 |
| 14 | -20 | -16 | -7 | 7 | 19 | 18 | 15 | -7 | -23 |
| 0.25 | -0.36 | -0.29 | -0.13 | 0.14 | 0.35 | 0.33 | 0.27 | -0.12 | -0.42 |

| | | | | | | | | | |
|------|-------|-------|-------|------|------|------|------|-------|-------|
| 11 | 270 | 541 | 820 | 1115 | 1407 | 1673 | 1936 | 2199 | 2457 |
| 5 | -11 | -15 | -11 | 10 | 27 | 18 | 6 | -6 | -23 |
| 0.09 | -0.20 | -0.27 | -0.19 | 0.17 | 0.49 | 0.33 | 0.11 | -0.10 | -0.41 |

| | | | | | | | | | |
|------|-------|-------|-------|------|------|------|------|-------|-------|
| 10 | 264 | 530 | 811 | 1108 | 1408 | 1670 | 1931 | 2191 | 2452 |
| 9 | -12 | -20 | -14 | 8 | 33 | 20 | 6 | -8 | -22 |
| 0.17 | -0.21 | -0.37 | -0.26 | 0.14 | 0.60 | 0.37 | 0.12 | -0.15 | -0.41 |

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0.2 | 0.3 | 0.4 | 0.4 | 0.3 | 0.7 | 0.5 | 0.2 | 0.3 | 0.4 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

RF Input Power (dBm)

| |
|----------------------|
| Measured Value (mV) |
| Error (mV) |
| LINEARITY ERROR (dB) |

| |
|----------------------|
| Measured Value (mV) |
| Error (mV) |
| LINEARITY ERROR (dB) |

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|----------------------|
| Measured Value (mV) |
| Error (mV) |
| LINEARITY ERROR (dB) |

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|----------------------|
| Measured Value (mV) |
| Error (mV) |
| LINEARITY ERROR (dB) |

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|----------------------|
| Measured Value (mV) |
| Error (mV) |
| LINEARITY ERROR (dB) |

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|----------------------|
| Measured Value (mV) |
| Error (mV) |
| LINEARITY ERROR (dB) |

| |
|----------------------|
| Measured Value (mV) |
| Error (mV) |
| LINEARITY ERROR (dB) |



CERTIFICATE OF CONFORMANCE

Martin Testing Laboratories
 Sacramento Division
 North Highlands, Ca. 95660
 Tel: 916-920-4110
 Fax: 916-920-4390

| Customer Name: | | Planar Monolithics Industries, Inc. | | MTL MJO No.: | | 3769-19.1 | |
|-----------------------------|---------------------------|-------------------------------------|----------------------|--------------------------------|-----------------------|--------------|----|
| Address: | | 4921 Robert J. Mathews Pkwy, Ste. 1 | | MTL Company Inspection: | | Yes X No | |
| City, State, Zip: | | El Dorado Hills, CA 95762 | | Customer P.O. No.: | | PO18-0436 | |
| Attention: | | John Merriner | | Source Inspection: | | Yes X No | |
| Date Test Started: | | 04/04/18 | | Government Contract No. | | N/A | |
| Date Test Completed: | | 04/04/18 | | Government Inspection: | | Yes No X | |
| Cert. Authorized by: | | Perry Martin, Technical Director | | | | | |
| Qty. | Part Name and Part Number | Serial Number | Specification Number | Para. No. | Test Title | Anomalies | |
| | | | | | | Yes | No |
| 3 | Test Unit 8410075-1 | PL22445, PL22446, PL22447 | Fig 4 | | Random Vibration Test | | X |
| | | | | | | | |
| Remarks: | | | | | | | |

CERTIFICATE OF CONFORMANCE: We hereby certify that the above parts/materials were processed in full compliance with all the drawing specification and/or technical provisions described in the Purchase Order.

Certificate No.: 3769-19.1

Signed **MTL**
QA
 Quality Assurance Department

Issue Date: 04/04/18

This certificate shall not be reproduced except in full, without written approval of the laboratory.
 Certificate of Conformance CO-1.0 Rev 1 (6/16/2013)

MARTIN
TESTING
LABORATORIES

SACRAMENTO DIVISION
P.O. BOX 2019
N. HIGHLANDS, CALIFORNIA 95660
TEL: 916-920-4110
FAX: 916-920-4390

GENERAL TEST DATA LOG

| | | | | | |
|-----------------------|-------------|--|-------------------|-------------------|-----------|
| Customer: | | Planar Monolithics Industries, Inc. | | MJO: | 3769-19.1 |
| Test Specimen: | | Test Unit | | Date: | 04/04/18 |
| Part No.: | | 8410075-1 | Serial No. | PL22445 – PL22447 | |
| Test Spec.: | | Fig. 4 | Rev.: | Para.: | |
| Test Title: | | Random Vibration | | | |
| DATE | TIME | LOG ENTRIES | | | |
| 04/04/18 | 10:05 | Set up vibration equipment with test units secured firmly on fixture. | | | |
| | 10:25 | Apply random vibration at a range of 20 – 2000 Hz, 6.071 Grms. on the Z axis for 15 min. | | | |
| | 10:45 | Testing completed. | | | |
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|-----------------------|-----------------|-----------------------------|-----|
| Performed by: | Perry Martin Jr | Operator(s) Initials | PJ |
| Test Engineer: | Perry Martin | GOV'T Q.A.R.: | N/A |

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SACRAMENTO DIVISION
P.O. BOX 2019
N. HIGHLANDS, CA 95660
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FAX: 916-920-4390

TEST EQUIPMENT
page 1 of 1

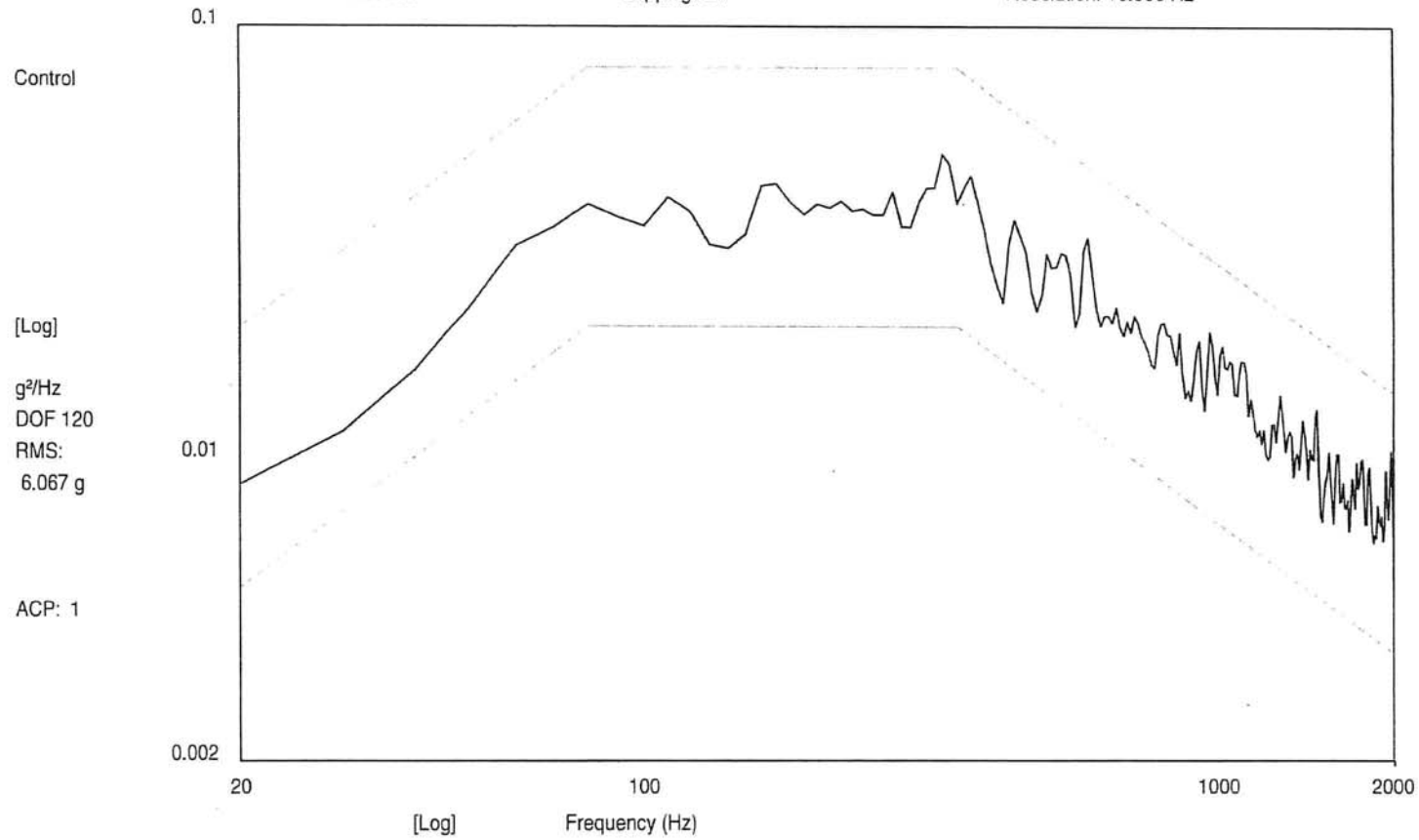
| Customer: | Planar Monolithics Industries, Inc. | | | MJO: | 3769-19.1 | |
|-----------------------|-------------------------------------|----------------------------|------------------------|------------------------|---------------------|------------|
| Test Specimen: | Test Unit | | | Date: | 04/04/18 | |
| Part No.: | 8410075-1 | Serial No. | PL22445 – PL22447 | | | |
| Test Spec.: | Fig. 4 | Rev.: | | Para.: | | |
| Test Title: | Random Vibration Test | | | | | |
| In Use | Equipment | Manufacturer/ Model | MTL I.D.# | Cal. Date ¹ | Cal. Due Date | |
| X | Vibration Exciter S/N:494 | Unholtz Dickie/ T-1000 32w | D3034M | Maintenance only | | |
| X | Power Amplifier S/N:2596 | Unholtz Dickie / 2XSA60 | D3033M | Maintenance only | | |
| X | Control System | Spectral Dynamics/2560 | 1549 | 10/09/17 | 04/09/18 | |
| X | Graphics Printer | HP Laser Jet 4 | D3036M | Maintenance only | | |
| | Accelerometer Power Supply | Unholtz Dickie / CVA-8 | D3000M | | | |
| | Accelerometer Power Supply | Endevco / 2775A | D3027M | | | |
| | Accelerometer Power Supply | Endevco / 2775A | D3028M | | | |
| | Accelerometer Power Supply | Endevco / 2775A | D3029M | | | |
| | Accelerometer Power Supply | Endevco / 2775A | D3030M | | | |
| | Accelerometer Power Supply | Endevco / 2775A | D3031M | | | |
| | Accelerometer | Unholtz Dickie / 10B10T | D3021M | | | |
| | Accelerometer | Unholtz Dickie / 10B10T | D3017M | | | |
| | Accelerometer | Unholtz Dickie / 10B10T | D3019M | | | |
| X | Accelerometer | Piezotronics/PCB353B33 | LW173625 | 08/15/17 | 08/15/18 | |
| | Accelerometer | Piezotronics/PCB353B15 | | | | |
| | Accelerometer | Endevco /2222C | | | | |
| | Accelerometer | Endevco / | | | | |
| | Variable Analog Filter | | | | | |
| | Temperature Conditioner | | | Maintenance only | | |
| | Digital Thermometer | | | | | |
| | Torque Wrench | | | | | |
| | Test Fixture | MTL Sac. | | Maintenance only | | |
| | Test Fixture | | | Maintenance only | | |
| | Oscilloscope | | | Indication only | | |
| | | | | | | |
| Accel. Label | Accel. Sens. (mV/m/s ²) | Accel. S/N | Mfr/Model | Accel. Label | Accel. Sens. (pC/g) | Accel. S/N |
| Control | 10.29 | LW173625 | Piezotronics PCB353B33 | | | |
| channel 2 | | | | | | |
| | | | | | | |

¹ In-service date of accelerometers

Test Level: 0.000 dB
Test Time: 000:15:00

Reference RMS: 6.071
Clipping: Off

Test Range: 20.000, 2000.000 Hz
Resolution: 10.000 Hz



10:39:25
04-Apr-2018

PMI Random 4.6.2
6 Units Z-Axis
Test Name: PMIESS.tmp