

Appendix O-1

Ambient Noise Level Measurement Field Sheets

FIELD MEASUREMENT DATA SHEET



Project Name: Fresno to Bakersfield Labor

Job # 27560811.53030100

SITE IDENTIFICATION: LT-1 OBSERVER(s): RM
 START DATE & TIME: 12/9 12:10 END DATE & TIME: 12/10 14:10
 ADDRESS: 6589 Otay Mesa Rd.
 GPS coordinates: 32° 34' 05.3" 116° 55' 56.8"

TEMP: 70 °F HUMIDITY: 38 % R.H. WIND: CALM LIGHT MODERATE VARIABLE
 WINDSPEED: 2-0 MPH DIR: N NE E SE S SW W NW STEADY GUSTY ___ MPH
 SKY: CLEAR SUNNY DARK PARTLY CLOUDY OVRCAST FOG DRIZZLE RAIN Other: _____

Instrument: LD 820 TYPE: 1 2 SERIAL #: 1768
 Calibrator: BK 4231 SERIAL #: 1850301

CALIBRATION CHECK: PRE-TEST 91.2 dBA SPL POST-TEST ___ dBA SPL WINDSCREEN ✓

SETTINGS: A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI OTHER: _____

| Rec # | Start Time / End Time | Leq | Lmax | L10 | L50 | L90 | Lmin |
|-------|-----------------------|-----|------|-----|-----|-----|------|
| 1 | 12:10 / 14:10 | | | | | | |
| | / | | | | | | |
| | / | | | | | | |
| | / | | | | | | |

COMMENTS: quietest L90 = ~~40.7~~ = 40.7

PRIMARY NOISE(S): TRAFFIC AIRCRAFT RAIL INDUSTRIAL AMBIENT OTHER _____

ROADWAY TYPE: _____

| COUNT DURATION: _____-MINUTE | SPEED (mph) | | | #2 COUNT: | | | SPEED (mph) | | |
|------------------------------|-------------|----|-------|-----------|----|-------|-------------|----|-------|
| | NB | EB | SB WB | NB | EB | SB WB | NB | EB | SB WB |
| AUTOS: | ___ | / | ___ | ___ | / | ___ | ___ | / | ___ |
| MED. TRUCKS: | ___ | / | ___ | ___ | / | ___ | ___ | / | ___ |
| HVY TRUCKS: | ___ | / | ___ | ___ | / | ___ | ___ | / | ___ |
| BUSES: | ___ | / | ___ | ___ | / | ___ | ___ | / | ___ |
| MOTORCYCLES: | ___ | / | ___ | ___ | / | ___ | ___ | / | ___ |

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

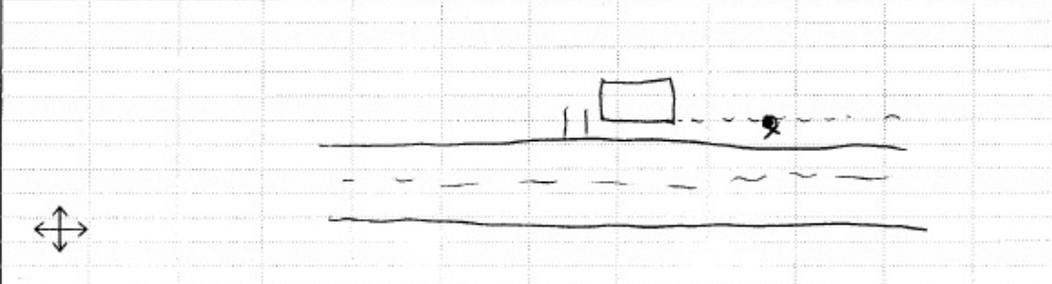
OTHER NOISE SOURCES: distant AIRCRAFT overhead / RUSTLING LEAVES / distant BARKING DOGS / BIRDS
 distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS

OTHER: _____

TERRAIN: HARD SOFT MIXED FLAT OTHER: _____

PHOTOS: _____

OTHER COMMENTS / SKETCH: _____



ID
Weather
Acoustic Measurements
Source Info and Traffic Counts
Description / Sketch

FIELD MEASUREMENT DATA SHEET



Project Name: Pio Pico AFC Noise

Job # 29874569 05000

SITE IDENTIFICATION: LT-222 2 OBSERVER(s): BV RR
 START DATE & TIME: 3/16/10 17:01 END DATE & TIME: _____
 ADDRESS: Squatter's Area 405 Alta Rd
 GPS coordinates: 32° 35' 37.9" N 116° 55' 51.2"

TEMP: 85 °F HUMIDITY: 10 % R.H. WIND: (CALM LIGHT) MODERATE VARIABLE
 WINDSPEED: 3-4 MPH DIR: (N) NE E SE S SW W NW STEADY GUSTY _____ MPH
 SKY: (CLEAR) SUNNY DARK PARTLY CLOUDY OVRCAST FOG DRIZZLE RAIN Other: _____

INSTRUMENT: LD 920 TYPE: (A) 2 SERIAL #: Yellow 1470
 CALIBRATOR: CAL 200 SERIAL #: 2794
 CALIBRATION CHECK: PRE-TEST 94.0 dBA SPL POST-TEST _____ dBA SPL WINDSCREEN

SETTINGS: A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI OTHER: _____

| Rec # | Start Time / End Time | L _{eq} | L _{max} | L _{min} | L ₉₀ | L ₅₀ | L ₁₀ |
|-------|-----------------------|-----------------|------------------|------------------|-----------------|-----------------|-----------------|
| 1 | 17:01 | | | | | | |
| / | / | | | | | | |
| / | / | | | | | | |
| / | / | | | | | | |

COMMENTS: Domestic Animals including Dogs, Chickens, Goats, Horses, Cattle

PRIMARY NOISE(S): TRAFFIC AIRCRAFT RAIL INDUSTRIAL AMBIENT OTHER
 ROADWAY TYPE: _____

| COUNT DURATION: _____ -MINUTE | SPEED (mph) | | #2 COUNT: | | SPEED (mph) | |
|-------------------------------|-------------|---------|-----------|---------|-------------|---------|
| | NB / EB | SB / WB | NB / EB | SB / WB | NB / EB | SB / WB |
| AUTOS: | _____ | _____ | _____ | _____ | _____ | _____ |
| MED. TRUCKS: | _____ | _____ | _____ | _____ | _____ | _____ |
| HVY TRUCKS: | _____ | _____ | _____ | _____ | _____ | _____ |
| BUSES: | _____ | _____ | _____ | _____ | _____ | _____ |
| MOTORCYCLES: | _____ | _____ | _____ | _____ | _____ | _____ |

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: distant AIRCRAFT overhead / RUSTLING LEAVES / distant BARKING DOGS / BIRDS
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
 OTHER: _____

TERRAIN: HARD (SOFT) MIXED FLAT OTHER: _____

PHOTOS: _____
 OTHER COMMENTS / SKETCH:

Squatter's Area

CALDOC

CAL DOC Donor Correction Facility

FIELD MEASUREMENT DATA SHEET



Project Name: Fresno to Bakersfield Labor

Job # 27560811.53030100

SITE IDENTIFICATION: ST-1 OBSERVER(S): RM
 START DATE & TIME: 12/19 END DATE & TIME: 12/10
 ADDRESS: 6589 Otay mesa Rd
 GPS coordinates: 32° 34' 03.3" 116° 55' 57.8"

TEMP: _____ °F HUMIDITY: _____ % R.H. WIND: CALM LIGHT MODERATE VARIABLE
 WINDSPEED: _____ MPH DIR: N NE E SE S SW W NW STEADY GUSTY _____ MPH
 SKY: CLEAR SUNNY DARK PARTLY CLOUDY OVRCAST FOG DRIZZLE RAIN Other: _____

Instrument: BK 2250 TYPE: D2 SERIAL #: 2672071
 Calibrator: BK 4231 SERIAL #: 1850301
 CALIBRATION CHECK: PRE-TEST 94.1 dBA SPL POST-TEST 94.1 dBA SPL WINDSCREEN

SETTINGS: A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI OTHER: _____

| Rec # | Start Time / End Time | Leq | Lmax | L10 | L50 | L90 | Lmin |
|-------|-----------------------|------|------|------|------|------|------|
| 1a | 14:06 / 14:16 | 74.7 | 89.8 | 78.6 | 70.2 | 57.8 | 45.1 |
| 1b | 14:17 / 14:27 | 73.9 | 90.5 | 78.2 | 68.2 | 56.1 | 48.8 |
| 2a | 20:31 / 20:41 | 70.8 | 90.3 | 73.7 | 59.8 | 48.9 | 43.1 |
| 2b | 20:42 / 20:52 | 66.0 | 84.1 | 66.0 | 52.1 | 43.0 | 41.1 |

COMMENTS: nighttime on back

| | | | | | | | |
|----|---------------|------|------|------|------|------|------|
| 3a | 00:08 / 00:18 | 67.8 | 86.2 | 68.4 | 53.1 | 43.6 | 39.7 |
| 3b | 00:18 / 00:28 | 65.1 | 85.1 | 63.2 | 44.8 | 40.0 | 38.2 |

PRIMARY NOISE(S): TRAFFIC AIRCRAFT RAIL INDUSTRIAL AMBIENT OTHER _____
 ROADWAY TYPE: _____

| | COUNT DURATION: _____ -MINUTE | | | | SPEED (mph) | | | | #2 COUNT: | | | | SPEED (mph) | | | |
|--------------|-------------------------------|----|----|----|-------------|----|----|----|-----------|----|----|----|-------------|----|----|----|
| | NB | EB | SB | WB | NB | EB | SB | WB | NB | EB | SB | WB | NB | EB | SB | WB |
| AUTOS: | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / |
| MED. TRUCKS: | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / |
| HVY TRUCKS: | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / |
| BUSES: | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / |
| MOTORCYCLES: | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / |

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

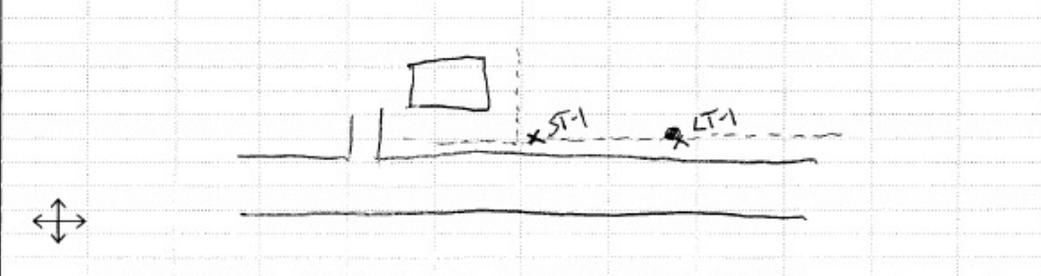
OTHER NOISE SOURCES: distant AIRCRAFT overhead RUSTLING LEAVES / distant BARKING DOGS / BIRDS
 distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS

OTHER: _____

TERRAIN: HARD SOFT MIXED FLAT OTHER: _____

PHOTOS: _____

OTHER COMMENTS / SKETCH: _____



FIELD MEASUREMENT DATA SHEET



Project Name: Pio Pico AFC Noise

Job # 29874569 05000

SITE IDENTIFICATION: ST-2 OBSERVER(s): BARR
 START DATE & TIME: 7/17/10 END DATE & TIME: _____
 ADDRESS: Squire's Area 405 Pico Rd
 GPS coordinates: 32° 35' 27.0" 116° 55' 43.0"

TEMP: 66 ° F HUMIDITY: 24 % R.H. WIND: CALM LIGHT MODERATE VARIABLE
 WINDSPEED: _____ MPH DIR: N NE E SE S SW W NW STEADY GUSTY _____ MPH
 SKY: CLEAR SUNNY DARK PARTLY CLOUDY OVRCAST FOG DRIZZLE RAIN Other: _____

INSTRUMENT: BEK 2236 TYPE: 1 2 SERIAL #: 2015798
 CALIBRATOR: CAA 200 SERIAL #: 2744
 CALIBRATION CHECK: PRE-TEST 94 dBA SPL POST-TEST _____ dBA SPL WINDSCREEN

SETTINGS: A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI OTHER: _____

| Rec # | Start Time / End Time | L _{eq} | L _{max} | L _{min} | L ₉₀ | L ₅₀ | L ₁₀ |
|-------|-----------------------|-----------------|------------------|------------------|-----------------|-----------------|-----------------|
| 1 | 4:00 / 4:20 | 41.4 | 51.6 | 34.0 | 36.0 | 39.5 | 43.5 |
| 2 | 4:25 / 4:45 | 43.2 | 54.9 | 36.4 | 39.5 | 41.0 | 45.0 |
| 3 | 19:00 / 19:20 | 56.1 | 68.1 | 36.0 | 39.0 | 41.5 | 49.5 |
| 4 | 19:25 / 19:45 | 44.4 | 63.6 | 37.5 | 38.5 | 40.5 | 46.5 |

COMMENTS: Roosters crowing 384 Aircraft
Distant unidentifiable industrial
Occasional Horn (Distant)

PRIMARY NOISE(S): TRAFFIC AIRCRAFT RAIL INDUSTRIAL AMBIENT OTHER _____

ROADWAY TYPE: _____

| COUNT DURATION: | -MINUTE | | SPEED (mph) | | #2 COUNT: | | SPEED (mph) | |
|-----------------|---------|---------|-------------|---------|-----------|---------|-------------|---------|
| | NB / EB | SB / WB | NB / EB | SB / WB | NB / EB | SB / WB | NB / EB | SB / WB |
| AUTOS: | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| MED. TRUCKS: | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| HVY TRUCKS: | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| BUSES: | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| MOTORCYCLES: | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

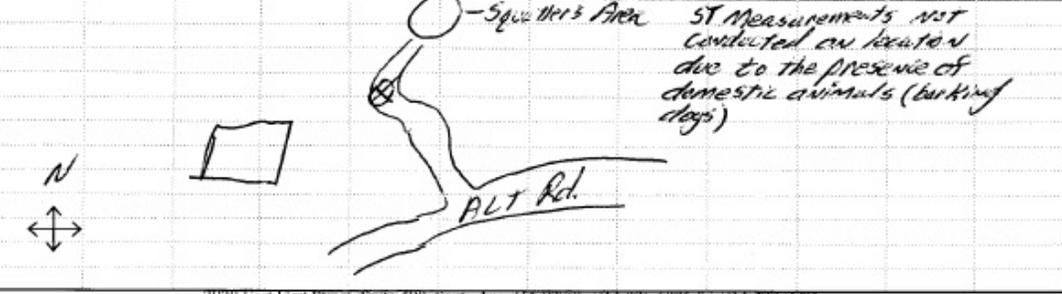
OTHER NOISE SOURCES: distant AIRCRAFT overhead / RUSTLING LEAVES / distant BARKING DOGS / BIRDS
 distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS

OTHER: _____

TERRAIN: HARD SOFT MIXED FLAT OTHER: _____

PHOTOS: _____

OTHER COMMENTS / SKETCH:



FIELD MEASUREMENT DATA SHEET



Project Name: Pio Pico AFC Noise

Job # 29874569 05000

SITE IDENTIFICATION: ST-~~1~~ 2 OBSERVER(s): BV, RR
 START DATE & TIME: 3/19/10 END DATE & TIME: _____
 ADDRESS: 405 Alza Rd (619) 476-8292
San Diego Inga 115 Encanto 1265
 GPS coordinates: 111 Macc St. Chula Vista, CA

TEMP: 78 ° F HUMIDITY: 31 % R.H. WIND: CALM LIGHT MODERATE VARIABLE
 WINDSPEED: 1-2 MPH DIR: N NE E SE S SW W (NW) STEADY GUSTY _____ MPH
 SKY: CLEAR SUNNY DARK PARTLY CLOUDY OVRCAST FOG DRIZZLE RAIN Other: _____

INSTRUMENT: 2236 (B&K) TYPE: 1 SERIAL #: 2015788
 CALIBRATOR: CAL 200 SERIAL #: 2794

CALIBRATION CHECK: PRE-TEST 94.0 dBA SPL POST-TEST _____ dBA SPL WINDSCREEN

SETTINGS: A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI OTHER: _____

| Rec # | Start Time / End Time | L _{eq} | L _{max} | L _{min} | L ₉₀ | L ₅₀ | L ₁₀ |
|----------|-----------------------|-----------------|------------------|------------------|-----------------|-----------------|-----------------|
| <u>5</u> | <u>11:10 / 11:30</u> | <u>49.3</u> | <u>65.2</u> | <u>36.3</u> | <u>39.0</u> | <u>42.5</u> | <u>52.5</u> |
| <u>6</u> | <u>11:35 / 11:55</u> | <u>47.3</u> | <u>64.6</u> | <u>37.4</u> | <u>39.5</u> | <u>41.5</u> | <u>47.5</u> |
| | | | | | | | |
| | | | | | | | |

COMMENTS: Aircraft, occasional gun fire from county shooting range southeast of site. Roosters crowing 2 LT-2. Small caliber rifles & pistols

PRIMARY NOISE(S): TRAFFIC AIRCRAFT RAIL INDUSTRIAL AMBIENT OTHER _____
 ROADWAY TYPE: _____

| COUNT DURATION: | -MINUTE | | SPEED (mph) | | #2 COUNT: | | SPEED (mph) | |
|-----------------|---------|---------|-------------|--------------|-----------|---------|-------------|--------------|
| | NB / EB | SB / WB | NB | EB / SB / WB | NB / EB | SB / WB | NB | EB / SB / WB |
| AUTOS: | | | | | | | | |
| MED. TRUCKS: | | | | | | | | |
| HVY TRUCKS: | | | | | | | | |
| BUSES: | | | | | | | | |
| MOTORCYCLES: | | | | | | | | |

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: distant AIRCRAFT overhead / RUSTLING LEAVES / distant BARKING DOGS / BIRDS
 distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
 OTHER: _____

TERRAIN: HARD SOFT MIXED FLAT OTHER: _____

PHOTOS: _____
 OTHER COMMENTS / SKETCH:

See Previous sketch

ID

Weather

Acoustic Measurements

Source Info and Traffic Counts

Description / Sketch

MEASUREMENT 238

Appendix O-2

Equipment Calibration Certificates

Certificate of Calibration and Conformance

Certificate Number 2010-131844

Instrument Model 820, Serial Number 1470, was calibrated on 19JUL2010. The instrument meets factory specifications per Procedure D0001.8160, ANSI S1.4 1983, IEC 651-Type 1 1979, and IEC 804-Type 1 1985.

Instrument found to be in calibration as received: YES

Date Calibrated: 19JUL2010

Calibration due: 19JUL2012

Calibration Standards Used

| MANUFACTURER | MODEL | SERIAL NUMBER | INTERVAL | CAL. DUE | TRACEABILITY NO. |
|--------------|--------------|---------------|-----------|-----------|------------------|
| Larson Davis | LDSigGn/2239 | 0099 / 0104 | 12 Months | 20JAN2011 | 2010-125871 |

Reference Standards are traceable to the National Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Temperature: 24 ° Centigrade

Relative Humidity: 34 %

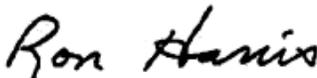
Affirmations

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the U.S. National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at Provo Engineering & Manufacturing Center. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with the requirements of ISO 17025 and ANSI Z540. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. A one year calibration is recommended, however calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of the issuer.

AS RECEIVED data same as shipped data.
Tested with 828-917

Signed: 
Technician: Ron Harris



Certificate of Calibration and Conformance

Certificate Number 2009-124205

Instrument Model 820, Serial Number 1768, was calibrated on 19NOV2009. The instrument meets factory specifications per Procedure D0001.8160, ANSI S1.4 1983, IEC 651-Type 1 1979, and IEC 804-Type 1 1985.

New Instrument

Date Calibrated: 19NOV2009

Calibration due:

Calibration Standards Used

| MANUFACTURER | MODEL | SERIAL NUMBER | INTERVAL | CAL. DUE | TRACEABILITY NO. |
|--------------|--------------|---------------|-----------|-----------|------------------|
| Larson Davis | LDSigGn/2209 | 0277 / 0109 | 12 Months | 25MAR2010 | 2009-116756 |

Reference Standards are traceable to the National Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Temperature: 22 ° Centigrade

Relative Humidity: 27 %

Affirmations

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the U.S. National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at Provo Engineering & Manufacturing Center. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with the requirements of ISO 17025 and ANSI Z540. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. A one year calibration is recommended, however calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of the issuer.

Tested with PRM828-2751

Signed:

Technician: Ron Harris

CERTIFICATE OF CALIBRATION
17797-1
FOR BRÜEL & KJÆR INTEGRATING
SOUND LEVEL METER

Model 2236

Serial No. 2015788

With Microphone Model 4155

ID No. N/A

Customer: **URS Corporation**
Santa Ana, CA 92705

Serial No. 1394638
P.O. # 01158213.00000

was tested and met factory specifications at the points tested
according to the Referenced Test Procedure

on **19 OCT 2010**

BY **HAROLD LYNCH**
Service Manager

As received condition: Within Specification.

Re-calibration due on: **19 OCT 2012**

| Certified References* | | | |
|-----------------------|-------------|-------------------|-----------------|
| <u>Mfg.</u> | <u>Type</u> | <u>Serial No.</u> | <u>Date Due</u> |
| B&K | 2636 | 1614877 | 25 MAY 2011 |
| B&K | 1049 | 1464545 | 09 JUN 2011 |
| HP | 34401A | MY45023668 | 06 NOV 2010 |
| HP | 3458A | 2823A17713 | 09 JUN 2011 |
| HP | 34970A | CRN001301 | 08 MAR 2011 |
| B&K | 4226 | 1774068 | 16 MAR 2011 |

Performed in Compliance with ANSI, NCSL Z-540-1, 1994 and
ISO 17025, ISO 9001:2008 Certification NQA No. 11252
*References are traceable to NIST (National Institute of Standards and Technology).

Note: For calibration data see enclosed pages.

The data represent both "as found" and "as left" condition.

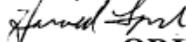
Reference Test Procedure: **ACCT Procedure 2236 Ver. 1.3**

Brüel & Kjær Factory Service Instructions: **2236**

Rev. Apr. 1985

| | | |
|----------------------------|---------------------------------|--|
| Temperature 23°C | Relative Humidity 45% | Barometric Pressure 986.52 hPa |
|----------------------------|---------------------------------|--|

Note: This calibration report shall not be reproduced, except in full, without written consent by Odin Metrology, Inc..

Signed: 

ODIN METROLOGY, INC.

CALIBRATION OF BRÜEL & KJÆR INSTRUMENTS
3533 OLD CONEJO ROAD; SUITE 125 THOUSAND OAKS CA 91320
PHONE: (805) 375-0830 FAX: (805) 375-0405

CERTIFICATE OF CALIBRATION
17235-1
FOR BRÜEL & KJÆR
HANDHELD ANALYZER

Model **2250**

Serial No. **2672071**

ID No. **N/A**

With Microphone **4189**

Serial No. **2662748**

With Preamplifier **ZC0032**

ID# **10617**

P.O. # **Verbal**

Customer: **URS Corporation**

Santa Ana, CA 92705

was tested and met factory specifications at the points tested
according to the Referenced Test Procedure

on **17 FEB 2010**

BY **HAROLD LYNCH**
Service Manager

As received condition: Within Specification.

Re-calibration due on: **17 FEB 2012**

| Certified References* | | | |
|-----------------------|-------------|-------------------|-----------------|
| <u>Mfg.</u> | <u>Type</u> | <u>Serial No.</u> | <u>Date Due</u> |
| B&K | 2636 | 1423390 | 05 JAN 2011 |
| B&K | 1049 | 1464545 | 09 JUN 2010 |
| HP | 34401A | 3146A48348 | 18 JUN 2010 |
| HP | 3458A | 2823A07179 | 23 JUN 2010 |
| B&K | 4226 | 2141942 | 07 DEC 2010 |
| B&K | 4231 | 1723623 | 30 JUN 2010 |

Performed in Compliance with ANSI, NCSL Z-540-1, 1994
and ISO 17025, ISO 9001:2000 Certification NQA No. 11252
*References are traceable to NIST (National Institute of Standards and Technology).

Note: For calibration data see enclosed pages.

The data represent both "as found" and "as left" conditions.

Reference Test Procedure: **ACCT Procedure 2250 Ver. 2.0**

Brüel & Kjær Factory Service Instructions: **2250**

| | | |
|----------------------------|---------------------------------|--|
| Temperature 23°C | Relative Humidity 32% | Barometric Pressure 986.33 hPa |
|----------------------------|---------------------------------|--|

Note: This calibration report shall not be reproduced, except in full, without written consent by Odin Metrology, Inc..

Signed: **ODIN METROLOGY, INC.**



CALIBRATION OF BRÜEL & KJÆR INSTRUMENTS
3533 OLD CONEJO ROAD; SUITE 125 THOUSAND OAKS CA 91320
PHONE: (805) 375-0830 FAX: (805) 375-0405

Certificate of Calibration and Conformance

Certificate Number 2009-122846

Instrument Model CAL200, Serial Number 2794, was calibrated on 09OCT2009. The instrument meets factory specifications per Procedure D0001.8190.

Instrument found to be in calibration as received: YES

Date Calibrated: 09OCT2009

Calibration due:

Calibration Standards Used

| MANUFACTURER | MODEL | SERIAL NUMBER | INTERVAL | CAL. DUE | TRACEABILITY NO. |
|-----------------|-----------------|---------------|-----------|-----------|------------------|
| Larson Davis | 2900 | 0661 | 12 Months | 07APR2010 | 2009-117163 |
| Hewlett Packard | 34401A | US36033460 | 12 Months | 16JUN2010 | 4382218 |
| Hewlett Packard | 34401A | 3146A10352 | 12 Months | 13JUL2010 | 4413817 |
| PCB | 1502C02FJ15PSIA | 1429 | 12 Months | 11AUG2010 | 3332861395 |
| Larson Davis | 2559 | 2506 | 12 Months | 03SEP2010 | 16868-1 |
| Larson Davis | PRM915 | 0112 | 12 Months | 09SEP2010 | 2009-121809 |
| Larson Davis | PRM902 | 0480 | 12 Months | 09SEP2010 | 2009-121820 |
| Larson Davis | MTS1000/2201 | 0111 | 12 Months | 09SEP2010 | SM090909-1 |

Reference Standards are traceable to the National Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Environmental test conditions as shown on calibration report.

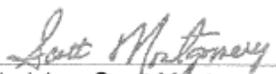
Affirmations

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the U.S. National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at Provo Engineering & Manufacturing Center. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with the requirements of ISO 17025 and ANSI Z540. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. A one year calibration is recommended, however calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of the issuer.

As Received data is the same as shipped data.

Signed: 
Technician: Scott Montgomery

Performance at Reference Conditions

| | | |
|-----------------------------|---------------|---------------|
| Nominal Level (dB SPL): | 94 | 114 |
| Measured Level (dB SPL): | 93.99 | 113.99 |
| Expanded Uncertainty (dB): | 0.129 | 0.126 |
| Level Error Limit (dB): | ±0.33 | ±0.33 |
| Nominal Frequency (Hz): | 1000 | 1000 |
| Measured Frequency (Hz): | 1000.1 | 1000.0 |
| Expanded Uncertainty (Hz): | 0.2 | 0.2 |
| Frequency Error Limit (Hz): | ±10.0 | ±10.0 |
| Measured Distortion (%): | 0.39 | 0.30 |
| Expanded Uncertainty (%): | 0.25 | 0.25 |
| Distortion Limit (%): | 2.0 | 2.0 |

The data is acquired by the insert voltage calibration method using the reference microphone's open circuit sensitivity.

Environmental Conditions

| | | |
|------------------------|-------|-------|
| Temperature (°C): | 24 | 24 |
| Relative Humidity (%): | 26 | 26 |
| Static Pressure (kPa): | 101.1 | 101.2 |

Reference Microphone

Model: Larson Davis 2559
Serial Number: 2506
Open Circuit Sensitivity: 12.324 mV/Pascal
Uncertainty: 0.100 dB

Influence of Static Pressure

| Nominal Level (dB SPL): | | 114 | | |
|-------------------------|----------------|-------------------|-----------------------|----------------|
| Nominal Pressure (kPa) | Pressure (kPa) | Level Change (dB) | Frequency Change (Hz) | Distortion (%) |
| 108.0 | 108.0 | -0.05 | 0.00 | 0.31 |
| 101.3 | 101.3 | 0.00 | 0.00 | 0.30 |
| 92.0 | 92.1 | 0.05 | -0.00 | 0.29 |
| 83.0 | 83.0 | 0.06 | 0.00 | 0.28 |
| 74.0 | 73.9 | 0.03 | 0.00 | 0.29 |
| 65.0 | 65.0 | -0.07 | 0.00 | 0.30 |
| Expanded Uncertainty: | 1.0 | 0.04 | 0.20 | 0.25 |
| Limit: | | ±0.30 | ±10.0 | 2.0 |

Reference microphone corrections applied.

Environmental Conditions

| | |
|------------------------|----|
| Temperature (°C): | 24 |
| Relative Humidity (%): | 26 |

Reference Microphone

Model: Larson Davis 2559
Serial Number: 2506

Static pressure was measured with a calibrated Motorola pressure sensor MPX2100AP.

Expanded uncertainty of environmental measurements: 2 °C, 3 %RH, 1.0 kPa

Uncertainty values are given at 95% confidence level (k = 2).

A Sound Level Meter can be calibrated to a level (L) defined as: L = measured level + pressure sensitivity
or if a Sound Level Meter is calibrated using the nominal level, the adjustments to data (X) are defined as:
X = measured level - nominal level - pressure sensitivity

CERTIFICATE OF CALIBRATION FOR BRÜEL & KJÆR

Sound Level Calibrator Type 4231

The Sound Pressure Level has been measured by comparison with Standard Reference Pistonphone.

Type 4220 serial No. 1048473 and
Type 4228 serial No. 1504084

Calibrated by: **TS** (BRÜEL & KJÆR)
Date of calibration: **10 AUG 2010**
Re-calibration due: **31 AUG 2011**

CONDITION OF TEST

Ambient Pressure: **989.11** hPa
Temperature **23** °C
Relative Humidity **43** %
Date of Calibration **18 OCT 2010**
Re-calibration due on **18 OCT 2011**
Calibration procedure: Brüel & Kjær 4231, Rev. 15 DEC 2004

UNCERTAINTY OF MEASUREMENT:

A: Estimated Uncertainty of comparison: ± 0.05 dB
B: Estimated Uncertainty of Ref. 4220: ± 0.06 dB
C: Total Uncertainty: 0.08 dB (calculated as the Square root of the summed squares of a and b)
D: Expanded Uncertainty with C.F: 2
(for 95% Confidence Level): 0.16 dB

Performed on a test system which operates in compliance with ANSI/ NCSL Z540-1, 1994 ISO 17025, and ISO 9001:2008 Certification NQA No. 11252. Reference standards pistonphones calibrated traceable to NIST with, NIST test no. 822/277993-09, D1280.

Calibration performed by: *Harold Lynch*
Harold Lynch, Service Manager

Note: This calibration report shall not be reproduced, except in full, without written consent by Odlin Metrology, Inc.

The calibrator type **4231**

Serial number **1850301**
ID number **N/A**

has been found to be **within** the specifications listed below.

Sound Pressure Level produced in the coupler terminated by a loading volume of 1.333 cm³:

94.0 dB \pm 0.2 dB
Level step: SPL increase of: **20 dB \pm 0.1 dB**
Frequency: **1000 Hz \pm 0.1 %**
Distortion: **< 1%**

For: **URS Corporation**
Santa Ana, CA 92705

Certificate: 17797-3 PO#01158213.00000

PERFORMANCE AS RECEIVED:

Frequency **999.8** Hz
SPL **94.37** dB (outside)
SPL + 20 dB **114.37** dB (outside)
Distortion (at 94 dB) **0.3** %
Battery voltage **1.2** Volt

Was frequency and SPL adjusted for improvement? **Yes!**
Was battery replaced with new alkaline type? **Yes!**

FINAL PERFORMANCE:

Frequency **999.8** Hz
SPL **93.98** dB
SPL + 20 dB **114.01** dB
Distortion (at 94 dB) **0.3** %

Note: This calibrator was **outside** Mfg. Specifications as received and returned **within** Mfg. Specifications.

ODIN METROLOGY, INC.

CALIBRATION OF BRÜEL & KJÆR INSTRUMENTS
3533 OLD CONEJO ROAD, SUITE # 125
THOUSAND OAKS, CA 91320
PHONE: (805) 375-0830 FAX: (805) 375-0405