

# Populations, Activity and Emissions of Diesel Nonroad Equipment in EPA Region 7

## Phase 2 SEMTECH Daily Span Results Appendix R

Assessment and Standards Division  
Office of Transportation and Air Quality  
U.S. Environmental Protection Agency

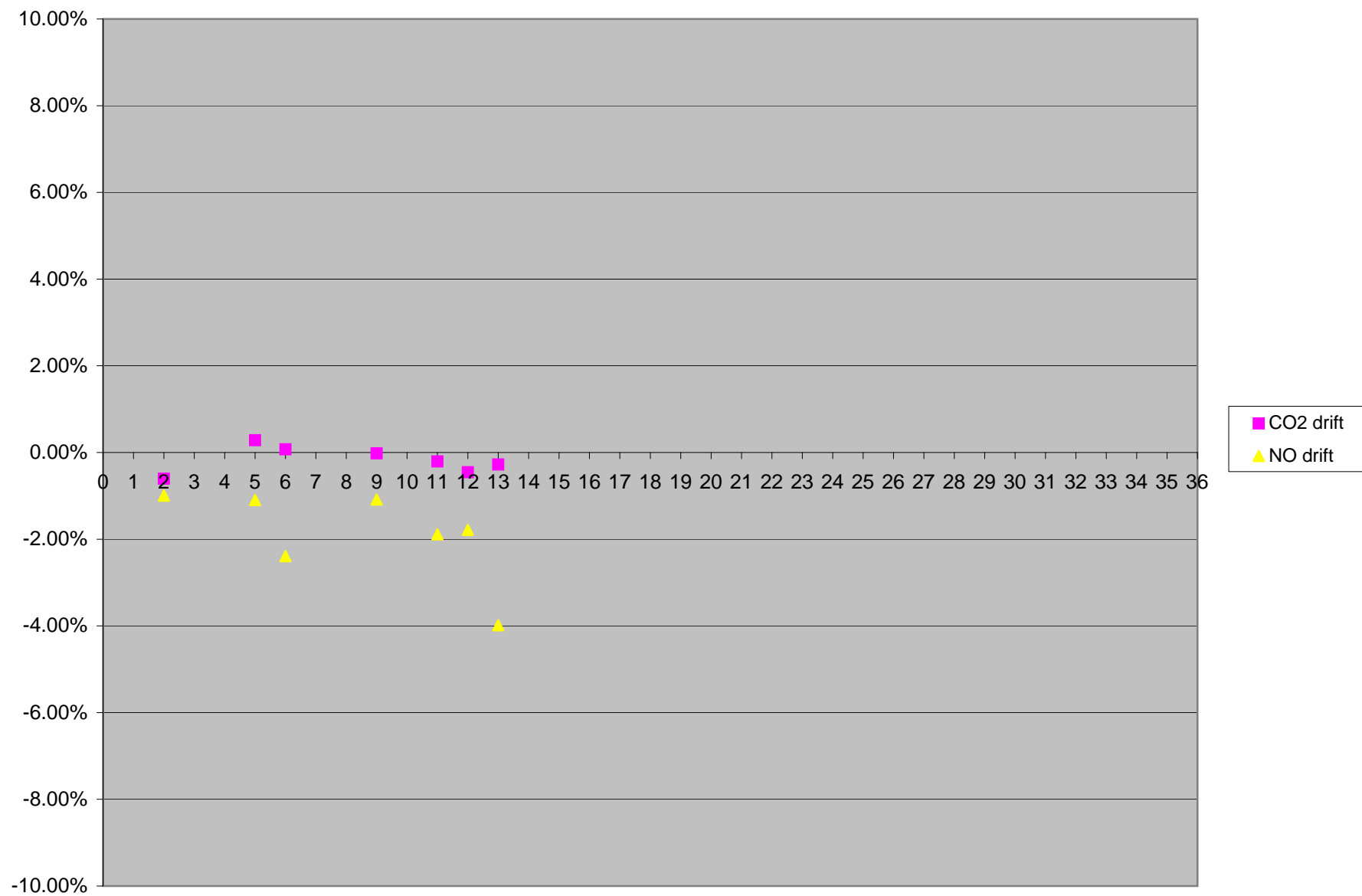
Prepared for EPA by  
Eastern Research Group, Inc. (ERG)  
EPA Contract No. EP-C-06-080

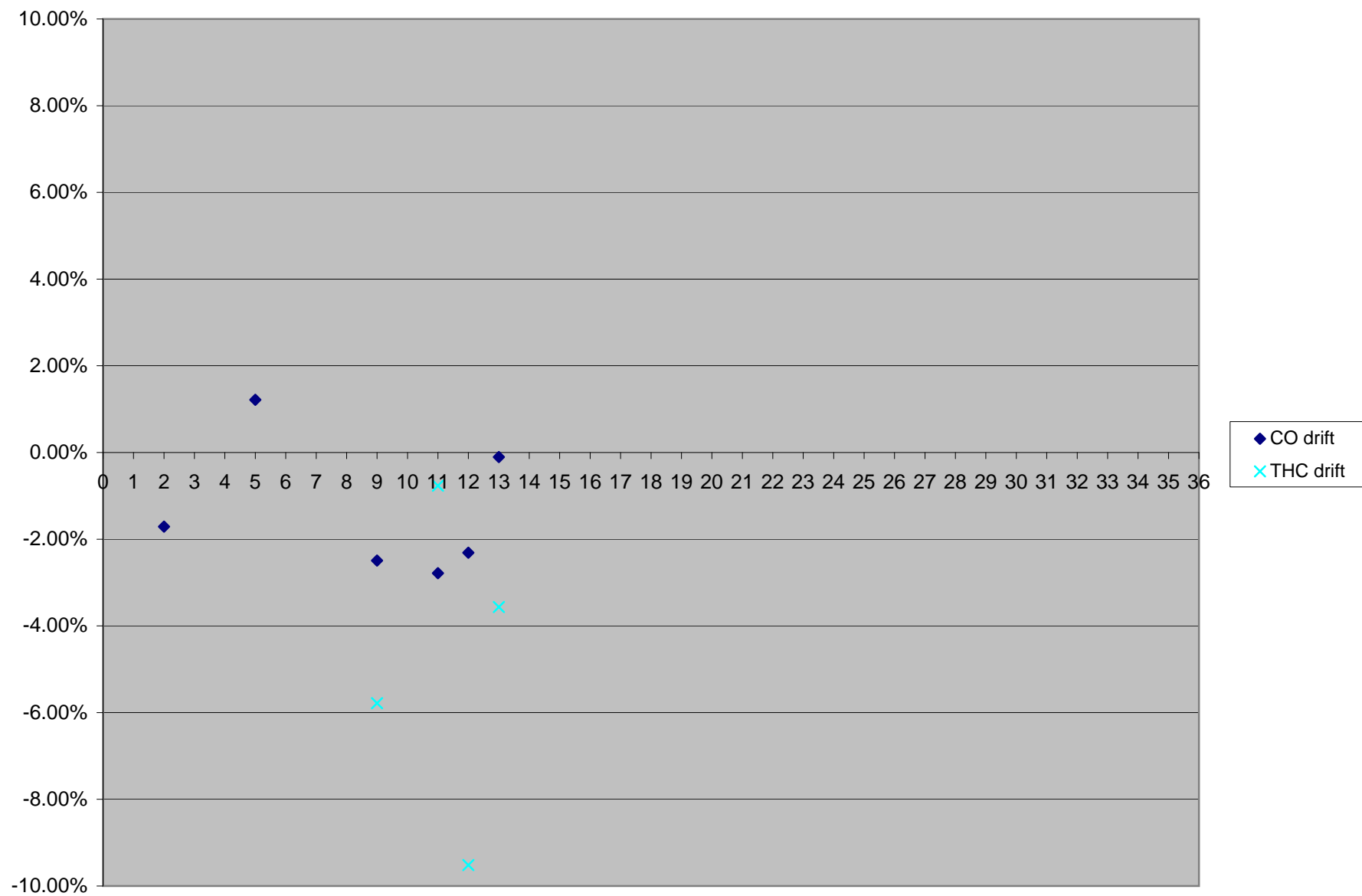
Test	3858_1482	3858_1482_1 (a) & (b)	3858_5754 (a) & (b)	2523_0713 (a) & (b)
Date	9/18/2007	9/20/2007	9/21/2007	9/27/2007
CO drift		-1.71%		
CO2 drift		-0.60%		
NO drift		-0.99%		
THC drift		-10.98%		
NO2 drift		1.40%		
Test Comments	No post-test audit or span		No post-test audit or span	No post-test audit or span

Test	2523_6087 (a) & (b)	2523_0210 (a) & (b)	3597_095k	3597_0726 (a) - (c )
Date	9/28/2007	10/2/2007	10/4/2007	10/9/2007
CO drift	1.21%	-13.07%		
CO2 drift	0.28%	0.07%		
NO drift	-1.10%	-2.39%		
THC drift	-12.17%	-10.45%		
NO2 drift	8.33%	-28.96%		
Test Comments			No post-test audit or span	No post-test audit or span

Test	2745_1190 (a) & (b)	3858_4862_1	3858_4862_2 (a) - (d)	3597-4734 (a) & (b)
Date	10/11/2007	10/13/2007	10/15/2007	10/24/2007
CO drift	-2.49%		-2.78%	-2.31%
CO2 drift	-0.02%		-0.21%	-0.46%
NO drift	-1.09%		-1.89%	-1.79%
THC drift	-5.78%		-0.77%	-9.52%
NO2 drift	1.52%		-8.38%	-2.34%
Test Comments		No post-test audit or span		

Test	3597_9706 (a) - (c )
Date	10/27/2007
CO drift	-0.11%
CO2 drift	-0.28%
NO drift	-3.99%
THC drift	-3.56%
NO2 drift	-4.25%
Test Comments	





**(a) & (b)****Audit/Span/Zero Information:**

Span

InfoVer 1

Date 9/18/2007

Time 7:52:14

Purge Delay 30

Gas Path	Span										
	CO	CO2	O2	HC	NO	NO2	CH4				
Bottle Values	0.12	11.9	20.9	202	1520	504	0				

Gas	Previous	Current	Difference
NO2(ppm)	528.46875	505.2	23.26875

Span

InfoVer 1

Date 9/18/2007

Time 7:54:53

Purge Delay 30

Gas Path	Span								
	CO	CO2	O2	HC	NO	NO2	CH4		
Bottle Values	0.12	11.9	20.9	202	1520	504	0		

Gas	Previous	Current	Difference
CO(%)	0.125125	0.124	0.001125
CO2(%)	11.920625	11.91	0.010625
NO(ppm)	1518.075	1522.6	-4.525
THC(ppmC)	310.197917	320.0444	-9.846528

Audit

Date 9/18/2007

Time 7:58:13

Audit Duration 30

Idle Duration 15

Audit Path Span

Idle Path Ambient Air

Gas	Bottle	Tol	%Tol
CO (%)	0.02	0.005	3
CO2 (%)	6	0.2	3
O2 (%)	0	0.5	3
HC (ppmC3)	0	8	3
NO (ppm)	304	15	3
NO2 (ppm)	0	12	3
CH4 (ppm)	0	0	0
THC (ppmC3)	31	6	2

Gas	Bottle	Mean Value	Std Dev	Result
CO(%)	0.02	0.024533	0.00064	Passed
CO2(%)	6	6.047333	0.004577	Passed
O2(%)	0	10	0	Not Selected
HC(ppmC3)	0	500	0	Not Selected
NO(ppm)	304	280.5067	8.25413	Failed
NO2(ppm)	0	100	0	Not Selected
CH4(ppm)	0	0	0	Not Selected



THC(ppmC) 31 29.64222 0.10037 Passed

Auto-Zero Results:

Start Time 30:51.0  
Stop Time 32:34.0  
CH4 Drift Limit 5  
THC Drift Limit 5  
Purge Time 30  
Previous Path AMBIENT AIR  
Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	0.00669231	-0.001	0.007692	Pass
CO2	0.01	0	0.01	Pass
NO	-6.43667	0.85	-7.28667	Pass
NO2	7.32333	-0.1	7.42333	Pass
CH4				
HC	20.7077	-0.984615	21.6923	Pass
THC				THC Within Drift Limit0

Start Time 30:53.0  
Stop Time 34:17.0  
CH4 Drift Limit 5  
THC Drift Limit 5  
Purge Time 30  
Previous Path SAMPLE  
Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	0.000692308	0.000846	-0.000154	Pass
CO2	0.01	-0.01	0.02	Pass
NO	-4.71935	1.47742	-6.19677	Pass
NO2	3.59355	0.612903	2.98065	Pass
CH4				
HC	1.83077	-0.8	2.63077	Pass
THC	12.3746	-1.03316	13.4077	Pass0

Test Information:

SEMTECH\_DATA 9/18/2007 49:46.1 [RELEASE\_VER=2.017 BUILD=27 BDATE=09/12/2007 I



THC  
322

THC  
322

P=10.10.1.55]

(a) & (b)

Audit/Span/Zero Information:

Zero

InfoVer 1  
Date 9/20/2007  
Time 7:28:14  
Purge Delay 30  
Gas Path Ambient Air

Gas	Previous	Current	Difference
CO(%)	-0.003	0	-0.003
CO2(%)	-0.02	0	-0.02
NO(ppm)	3.93125	1.353333	2.577917
NO2(ppm)	24.15	-0.1	24.25
THC(ppmC)	-3.86875	-0.553333	-3.315417

Span

InfoVer 1  
Date 9/20/2007  
Time 7:33:27  
Purge Delay 30  
Gas Path Span

	CO	CO2	O2	HC	NO	NO2	CH4	THC
Bottle Values	0.12	12	20.9	202	1520	504	0	322

Gas	Previous	Current	Difference
CO(%)	0.122	0.119	0.003
CO2(%)	11.869375	11.99533	-0.125958
NO(ppm)	1537.825	1525.5	12.325
THC(ppmC)	324.89375	322.1822	2.711528

Span

InfoVer 1  
Date 9/20/2007  
Time 7:39:54  
Purge Delay 30  
Gas Path Span

	CO	CO2	O2	HC	NO	NO2	CH4	THC
Bottle Values	0.12	12	20.9	202	1520	504	0	322

Gas	Previous	Current	Difference
NO2(ppm)	462.19375	503.86	-41.66625

Audit

Date 9/20/2007  
Time 7:43:01  
Audit Duration 30  
Idle Duration 15

Audit Path Span  
Idle Path Ambient Air

Gas	Bottle	Tol	%Tol
CO (%)	0.02	0.005	3
CO2 (%)	6	0.2	3

O2 (%)	0	0.5	3
HC (ppmC3)	0	8	3
NO (ppm)	304	15	3
NO2 (ppm)	0	12	3
CH4 (ppm)	0	0	0
THC (ppmC3)	31	6	2

Gas	Bottle	Mean Value	Std Dev	Result
CO(%)	0.02	0.024	NaN	Passed
CO2(%)	6	6.047333	0.007988	Passed
O2(%)	0	10		0 Not Selected
HC(ppmC3)	0	500		0 Not Selected
NO(ppm)	304	294.7067	1.711502	Passed
NO2(ppm)	0	100		0 Not Selected
CH4(ppm)	0	0		0 Not Selected
THC(ppmC)	31	28.99778	0.052654	Passed

Zero

InfoVer	1
Date	9/20/2007
Time	16:29:33
Purge Delay	30
Gas Path	Ambient Air

Gas	Previous	Current	Difference
CO(%)	0.002375	-0.001	0.003375
CO2(%)	0.000625	-0.01	0.010625
NO(ppm)	1.18125	3.54	-2.35875
NO2(ppm)	0.125	-1.54	1.665
THC(ppmC)	-1.25	-0.806667	-0.443333

Span

InfoVer	1								
Verify Only									
Date	9/20/2007								
Time	16:33:27								
Purge Delay	30								
Gas Path	Span								
	CO	CO2	O2	HC	NO	NO2	CH4	THC	
Bottle Values	0.12	12	20.9		202	1520	504	0	322

Gas	Previous	Current	Difference
CO(%)	0.117	0.117	0
CO2(%)	11.923333	11.92333	0
NO(ppm)	1510.48	1510.48	0
THC(ppmC)	290.3	290.3	0

Span

InfoVer	1
Verify Only	
Date	9/20/2007
Time	16:35:33
Purge Delay	30
Gas Path	Span

	CO	CO2	O2	HC	NO	NO2	CH4	THC
Bottle Values	0.12	12	20.9	202	1520	504	0	322
Gas	Previous	Current	Difference					
NO2(ppm)	511.04	511.04	0					

#### Auto-Zero Results:

Start Time 11:36.7  
 Stop Time 13:45.7  
 CH4 Drift Limit 5  
 THC Drift Limit 5  
 Purge Time 30  
 Previous Path SAMPLE  
 Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	0.0086923	0	0.008692	Pass
CO2	0.0238462	0	0.023846	Pass
NO	-8.4	0.23871	-8.63871	Pass
NO2	7.55	0.167742	7.38226	Pass
CH4				
HC	16.6077	-0.907692	17.5154	Pass
THC				THC Within Drift Limit0

Start Time 11:39.7  
 Stop Time 13:22.7  
 CH4 Drift Limit 5  
 THC Drift Limit 5  
 Purge Time 30  
 Previous Path SAMPLE  
 Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	0.001	0	0.001	Pass
CO2	0.01	-0.002308	0.012308	Pass
NO	-1.71935	0.232258	-1.95161	Pass
NO2	14.8484	0.332258	14.5161	Pass
CH4				
HC	0.838462	-0.607692	1.44615	Pass
THC				THC Within Drift Limit0

Start Time 11:41.7  
 Stop Time 13:27.7  
 CH4 Drift Limit 5  
 THC Drift Limit 5  
 Purge Time 30  
 Previous Path SAMPLE  
 Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	0.0055385	-0.001077	0.006615	Pass
CO2	0.01	-0.014615	0.024615	Pass

NO	-10.0167	0.758065	-10.7747	Pass
NO2	10.66	-0.587097	11.2471	Pass
CH4				
HC	19.7308	-0.853846	20.5846	Pass
THC				THC Within Drift Limit0

Start Time	11:43.7
Stop Time	13:29.7
CH4 Drift Limit	5
THC Drift Limit	5
Purge Time	30
Previous Path	SAMPLE
Zero Path	Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	0.0009231	-0.001	0.001923	Pass
CO2	-0.0030769	-0.01	0.006923	Pass
NO	-5.6129	0.66129	-6.27419	Pass
NO2	3.59032	-6.09032	9.68065	Pass
CH4				
HC	1.62308	-2.02308	3.64615	Pass
THC				THC Within Drift Limit0

Start Time	11:45.7
Stop Time	13:27.7
CH4 Drift Limit	5
THC Drift Limit	5
Purge Time	30
Previous Path	SAMPLE
Zero Path	Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	-0.0020769	0	-0.002077	Pass
CO2	-0.01	0	-0.01	Pass
NO	-0.974194	1.36129	-2.33548	Pass
NO2	-0.0677419	-0.3	0.232258	Pass
CH4				
HC	-1.6	-1.1	-0.5	Pass
THC				THC Within Drift Limit0

Start Time	41:56.7
Stop Time	43:36.7
CH4 Drift Limit	5
THC Drift Limit	5
Purge Time	30
Previous Path	SAMPLE
Zero Path	Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	0.0012308	0	0.001231	Pass
CO2	-0.0053846	0	-0.005385	Pass
NO	-2.1871	2.47333	-4.66043	Pass
NO2	-7.65161	-0.193333	-7.45828	Pass
CH4				

HC	1.45385	-1.06923	2.52308	Pass
THC	THC Within Drift Limit0			

Start Time	41:59.7
Stop Time	44:00.7
CH4 Drift Limit	5
THC Drift Limit	5
Purge Time	30
Previous Path	SAMPLE
Zero Path	Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	0.0021539	-0.002385	0.004538	Pass
CO2	0.0107692	-0.004615	0.015385	Pass
NO	-5.45667	0.636667	-6.09333	Pass
NO2	-4.87333	-0.163333	-4.71	Pass
CH4				
HC	13.4615	-5.55385	19.0154	Pass
THC	THC Within Drift Limit0			

Test Information:

SEMTECH\_DATA/ 9/20/2007 22:59.9 [RELEASE\_VER=2.017 BUILD=27 BDATE=09/12/2007 IP=10.10.1.5





**Post Test Span Results**

(alternative calculation method)

CO(%)	<b>-1.71%</b>
CO2(%)	<b>-0.60%</b>
NO(ppm)	<b>-0.99%</b>
THC(ppmC)	<b>-10.98%</b>
NO2(ppm)	<b>1.40%</b>







**(a) & (b)****Audit/Span/Zero Information:**

Zero

InfoVer 1  
 Date 9/21/2007  
 Time 7:14:00  
 Purge Delay 30  
 Gas Path Ambient Air

Gas	Previous	Current	Difference
CO(%)	-0.004	-0.001	-0.003
CO2(%)	-0.02	0	-0.02
NO(ppm)	4.8	0.653333	4.146667
NO2(ppm)	-6.8	0.073333	-6.873333
THC(ppmC)	3.58125	0.246667	3.334583

**Span**

InfoVer 1  
 Date 9/21/2007  
 Time 7:19:38  
 Purge Delay 30  
 Gas Path Span

	CO	CO2	O2	HC	NO	NO2	CH4	THC
Bottle Values	0.12	12	20.9	202	1520	504	0	322

Gas	Previous	Current	Difference
CO(%)	0.118875	0.119533	-0.000658
CO2(%)	11.99125	12.00333	-0.012083
NO(ppm)	1517.875	1523.487	-5.611667
THC(ppmC)	311.6625	320.4578	-8.795278

**Audit**

Date 9/21/2007  
 Time 7:25:30  
 Audit Duration 30  
 Idle Duration 15

Audit Path Span  
 Idle Path Ambient Air

Gas	Bottle	Tol	%Tol
CO (%)	0.02	0.005	3
CO2 (%)	6	0.2	3
O2 (%)	0	0.5	3
HC (ppmC3)	0	8	3
NO (ppm)	304	15	3
NO2 (ppm)	0	12	3
CH4 (ppm)	0	0	0
THC (ppmC3)	31	6	2

Gas	Bottle	Mean Value	Std Dev	Result
CO(%)	0.02	0.019333	0.000488	Passed
CO2(%)	6	6.062667	0.008837	Passed
O2(%)	0	10	0	Not Selected
HC(ppmC3)	0	500	0	Not Selected
NO(ppm)	304	291.5067	1.597081	Passed

NO2(ppm)	0	100	0 Not Selected
CH4(ppm)	0	0	0 Not Selected
THC(ppmC)	31	29.71556	0.017213 Passed

Span										
InfoVer	1									
Date	9/21/2007									
Time	7:29:42									
Purge Delay	30									
Gas Path	Span									
	CO	CO2	O2	HC	NO	NO2	CH4	THC		
Bottle Values	0.12	12	20.9	202	1520	504	0	322		

Span										
InfoVer	1									
Date	9/21/2007									
Time	7:33:13									
Purge Delay	30									
Gas Path	Span									
	CO	CO2	O2	HC	NO	NO2	CH4	THC		
Bottle Values	0.12	12	20.9	202	1520	504	0	322		

Gas	Previous	Current	Difference							
NO2(ppm)	540.8938	504.3333	36.56042							

#### Auto-Zero Results:

Start Time	03:25.0
Stop Time	05:28.0
CH4 Drift Limit	5
THC Drift Limit	5
Purge Time	30
Previous Path	SAMPLE
Zero Path	Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	0.035	-0.000462	0.035462	Pass
CO2	1.96231	0	1.96231	Pass
NO	22.86	0.1	22.76	Pass
NO2	45.28	-0.119355	45.3994	Pass
CH4				
HC	64.4077	-0.061539	64.4692	Pass
THC				THC Within Drift Limit1

Start Time	55:23.0
Stop Time	57:06.0
CH4 Drift Limit	5
THC Drift Limit	5
Purge Time	30
Previous Path	AMBIENT AIR
Zero Path	Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
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CO	0.030077	-0.001	0.031077	Pass
CO2	0.000769	0	0.000769	Pass
NO	1.48387	2.42581	-0.941935	Pass
NO2	-2.90323	0	-2.90323	Pass
CH4				
HC	15.0154	0.623077	14.3923	Pass
THC				THC Within Drift Limit1

Start Time	24:15.0
Stop Time	26:09.0
CH4 Drift Limit	5
THC Drift Limit	5
Purge Time	30
Previous Path	AMBIENT AIR
Zero Path	Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	0.000538	-7.69E-05	0.000615	Pass
CO2	-2.27	0	-2.27	Pass
NO	-32	0.151613	-32.1516	Pass
NO2	-32	-0.019355	-31.9806	Pass
CH4				
HC	-11.3231	-1.11538	-10.2077	Pass
THC				THC Within Drift Limit1

Start Time	24:21.3
Stop Time	27:05.0
CH4 Drift Limit	5
THC Drift Limit	5
Purge Time	30
Previous Path	SAMPLE
Zero Path	Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	0.033	0.014	0.019	Pass
CO2	1.92	-0.02	1.94	Pass
NO	43.4533	-2.28065	45.734	Pass(1)
NO2	32.9033	0.603226	32.3001	Pass
CH4				
HC	51.35	1.62308	49.7269	Pass
THC				THC Within Drift Limit1

Start Time	49:39.0
Stop Time	51:34.0
CH4 Drift Limit	5
THC Drift Limit	5
Purge Time	30
Previous Path	SAMPLE
Zero Path	Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	0.005231	-0.001231	0.006462	Pass
CO2	-2.22615	0.006923	-2.23308	Pass
NO	-32	1.45806	-33.4581	Pass



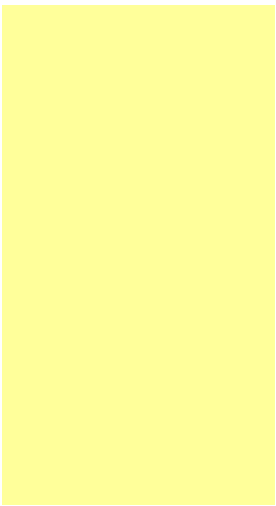
NO2	-32	0.080645	-32.0806	Pass
CH4				
HC	-0.830769	-9.84615	9.01538	Pass
THC				THC Within Drift Limit1

Start Time	49:41.0
Stop Time	51:23.0
CH4 Drift Limit	5
THC Drift Limit	5
Purge Time	30
Previous Path	SAMPLE
Zero Path	Ambient Air

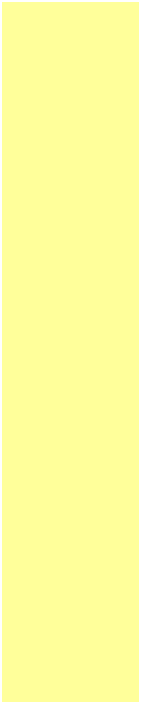
Gas	Previous	Current	Difference	Pass/Fail
CO	0.002	0.000385	0.001615	Pass
CO2	0.02	-0.003846	0.023846	Pass
NO	4.32667	0.512903	3.81376	Pass
NO2	-5.05333	0	-5.05333	Pass
CH4				
HC	-17.4692	-1.50769	-15.9615	Pass
THC				THC Within Drift Limit1

Test Information:

SEMTECH\_DATA\_FIL 9/21/2007 13:33.3 [RELEASE\_VER=2.017 BUILD=27 BDATE=09/12/2007 IP=10.10.1.5]



pre-test span



pre-test span





(a)

Audit/Span/Zero Information:

Zero

InfoVer 1

Date

Time 6:54:24

Purge Delay 30

Gas Path Ambient Air

Zero

InfoVer 1

Date 9/27/2007

Time 7:00:58

Purge Delay 30

Gas Path Ambient Air

Gas	Previous	Current	Difference
CO(%)	-0.000188	0	-0.000188
CO2(%)	0	0	0
NO(ppm)	1.25	0.933333	0.316667
NO2(ppm)	2.59375	-0.006667	2.600417
THC(ppmC)	-0.3	0.013333	-0.313333

Span

InfoVer 1

Date 9/27/2007

Time 7:03:55

Purge Delay 30

Gas Path Ambient Air

	CO	CO2	O2	HC	NO	NO2	CH4	THC
Bottle Value	0.12	12	20.9	202	1520	504	0	200

Gas	Previous	Current	Difference
O2(%)	20	20.9	-0.9

Span

InfoVer 1

Date 9/27/2007

Time 7:06:14

Purge Delay 30

Gas Path Span

	CO	CO2	O2	HC	NO	NO2	CH4	THC
Bottle Value	0.12	12	20.9	202	1520	504	0	322

Gas	Previous	Current	Difference
CO(%)	0.123	0.119133	0.003867
CO2(%)	11.98188	11.99	-0.008125
NO(ppm)	1508.319	1530.067	-21.74792
THC(ppmC)	332.3604	321.5156	10.84486

Span

InfoVer 1

Date 9/27/2007

Time 7:11:26

Purge Delay	30										
Gas Path	Span										
	CO	CO2	O2	HC	NO	NO2	CH4	THC			
Bottle Value	0.12	12	20.9	202	1520	504	0	322			
Gas	Previous	Current	Difference								
NO2(ppm)	453.8313	503.28	-49.44875								

#### Audit

Date 9/27/2007

Time 7:13:22

Audit Duration 30

Idle Duration 15

Audit Path Span

Idle Path Ambient Air

Gas	Bottle	Tol	%Tol	
CO (%)	0.02	0.005	3	
CO2 (%)	6	0.2	3	
O2 (%)	0	0.5	3	
HC (ppmC)	0	8	3	
NO (ppm)	304	15	3	
NO2 (ppm)	0	12	3	
CH4 (ppm)	0	0	0	
THC (ppmC)	31	6	2	

Gas	Bottle	Mean Value	Std Dev	Result
CO(%)	0.02	0.0196	0.000507	Passed
CO2(%)	6	6.050667	0.002582	Passed
O2(%)	0	10	0	Not Selected
HC(ppmC)	0	500	0	Not Selected
NO(ppm)	304	271.8467	13.71771	Failed
NO2(ppm)	0	100	0	Not Selected
CH4(ppm)	0	0	0	Not Selected
THC(ppmC)	31	29.55111	0.027794	Passed

#### Audit

Date 9/27/2007

Time 7:14:29

Audit Duration 30

Idle Duration 15

Audit Path Span

Idle Path Ambient Air

Gas	Bottle	Tol	%Tol	
CO (%)	0.02	0.005	3	
CO2 (%)	6	0.2	3	
O2 (%)	0	0.5	3	
HC (ppmC)	0	8	3	
NO (ppm)	304	15	3	
NO2 (ppm)	0	12	3	
CH4 (ppm)	0	0	0	
THC (ppmC)	31	6	2	

Gas	Bottle	Mean Value	Std Dev	Result
CO(%)	0.02	0.020267	0.000458	Passed

CO2(%)	6	6.053333	0.013973	Passed
O2(%)	0	10	0	Not Selected
HC(ppmC3	0	500	0	Not Selected
NO(ppm)	304	287.42	4.334941	Failed
NO2(ppm)	0	100	0	Not Selected
CH4(ppm)	0	0	0	Not Selected
THC(ppmC	31	29.29556	0.060246	Passed

Auto-Zero Results:

Start Time 25:25.1  
 Stop Time 27:06.1  
 CH4 Drift L 5  
 THC Drift L 5  
 Purge Time 30  
 Previous P SAMPLE  
 Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	0.002077	0	0.002077	Pass
CO2	0.02	0	0.02	Pass
NO	-4.09333	0.280645	-4.37398	Pass
NO2	12.6967	-0.216129	12.9128	Pass
CH4				
HC	20.4154	-0.723077	21.1385	Pass
THC				THC Within Drift Limit1

Test Information:

SEMTECH 9/27/2007 52:48.4 [RELEASE\_VER=2.017 BUILD=27 BDATE=09/12/2007 IP=10.10.1.55]

(b)

Audit/Span/Zero Information:

Zero  
 InfoVer 1  
 Date 9/27/2007  
 Time 13:15:20  
 Purge Delay 30  
 Gas Path Ambient Air

Gas	Previous	Current	Difference
CO(%)	0.002	0.0004	0.0016
CO2(%)	-0.004375	0	-0.004375
NO(ppm)	6.85	0.973333	5.876667
THC(ppmC	-11.65	-2.413333	-9.236667

Test Information:

SEMTECH 9/27/2007 14:49.2 [RELEASE\_VER=2.017 BUILD=27 BDATE=09/12/2007 IP=10.10.1.55]







pre-test span

(a) & (b)

Audit/Span/Zero Information:

Zero

InfoVer 1  
Date 9/28/2007  
Time 7:17:22  
Purge Delay 30  
Gas Path Ambient Air

Zero

InfoVer 1  
Date 9/28/2007  
Time 7:21:17  
Purge Delay 30  
Gas Path Ambient Air

Zero

InfoVer 1  
Date 9/28/2007  
Time 7:23:48  
Purge Delay 30  
Gas Path Ambient Air

Gas	Previous	Current	Difference
CO(%)	-0.000563	-0.001	0.000437
CO2(%)	0	0	0
NO(ppm)	-0.5	-0.66	0.16
NO2(ppm)	0.2625	-0.026667	0.289167

Span

InfoVer 1  
Date 9/28/2007  
Time 7:26:18  
Purge Delay 30  
Gas Path Span

	CO	CO2	O2	HC	NO	NO2	CH4	THC
Bottle Values	0.12	12	20.9	202	1520	504	0	332

Gas	Previous	Current	Difference
CO(%)	0.12	0.119267	0.000733
CO2(%)	11.98188	12.00467	-0.022792
NO(ppm)	1527.431	1512.693	14.73792
THC(ppmC)	351.5875	334.1333	17.45417

Span

InfoVer 1  
Date 9/28/2007  
Time 7:31:29  
Purge Delay 30  
Gas Path Span

	CO	CO2	O2	HC	NO	NO2	CH4	THC
Bottle Values	0.12	12	20.9	202	1520	504	0	332

Gas	Previous	Current	Difference
-----	----------	---------	------------

NO2(ppm)	477.05	505.4067	-28.35667
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Audit

Date 9/28/2007

Time 7:34:01

Audit Duration 30

Idle Duration 15

Audit Path Span

Idle Path Ambient Air

Gas	Bottle	Tol	%Tol
-----	--------	-----	------

CO (%)	0.02	0.005	3
--------	------	-------	---

CO2 (%)	6	0.2	3
---------	---	-----	---

O2 (%)	0	0.5	3
--------	---	-----	---

HC (ppmC3)	0	8	3
------------	---	---	---

NO (ppm)	300	15	3
----------	-----	----	---

NO2 (ppm)	0	12	3
-----------	---	----	---

CH4 (ppm)	0	0	0
-----------	---	---	---

THC (ppmC3)	31	6	2
-------------	----	---	---

Gas	Bottle	Mean Value	Std Dev	Result
CO(%)	0.02	0.002467	0.001302	Failed
CO2(%)	6	0.042	0.066462	Failed
O2(%)	0	8	4.140393	Not Selected
HC(ppmC3)	0	400	207.0197	Not Selected
NO(ppm)	300	1.3	6.163255	Failed
NO2(ppm)	0	80	41.40393	Not Selected
CH4(ppm)	0	0	0	Not Selected
THC(ppmC)	31	1.848889	1.329331	Failed

Audit

Date 9/28/2007

Time 7:34:45

Audit Duration 30

Idle Duration 15

Audit Path Span

Idle Path Ambient Air

Gas	Bottle	Tol	%Tol
-----	--------	-----	------

CO (%)	0.02	0.005	3
--------	------	-------	---

CO2 (%)	6	0.2	3
---------	---	-----	---

O2 (%)	0	0.5	3
--------	---	-----	---

HC (ppmC3)	0	8	3
------------	---	---	---

NO (ppm)	300	15	3
----------	-----	----	---

NO2 (ppm)	0	12	3
-----------	---	----	---

CH4 (ppm)	0	0	0
-----------	---	---	---

THC (ppmC3)	31	6	2
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Gas	Bottle	Mean Value	Std Dev	Result
CO(%)	0.02	0.024	NaN	Passed
CO2(%)	6	6.072667	0.023442	Passed
O2(%)	0	10	0	Not Selected
HC(ppmC3)	0	500	0	Not Selected
NO(ppm)	300	284.3133	5.828117	Failed
NO2(ppm)	0	100	0	Not Selected
CH4(ppm)	0	0	0	Not Selected

THC(ppmC) 31 31.21556 0.027794 Passed

Zero

InfoVer 1  
Date 9/28/2007  
Time 11:39:51  
Purge Delay 30  
Gas Path Sample

Gas	Previous	Current	Difference
THC(ppmC)	-9.55625	-1.246667	-8.309583

Zero

InfoVer 1  
Date 9/28/2007  
Time 11:42:59  
Purge Delay 30  
Gas Path Ambient Air

Gas	Previous	Current	Difference
CO(%)	0.001687	0	0.001687
CO2(%)	0.01	-0.01	0.02
NO(ppm)	3.4375	0.093333	3.344167
NO2(ppm)	10.0375	0	10.0375

Span

InfoVer 1  
Verify Only  
Date 9/28/2007  
Time 12:55:31  
Purge Delay 30  
Gas Path Span

	CO	CO2	O2	HC	NO	NO2	CH4	THC
Bottle Values	0.12	12	20.9	202	1520	504	0	322

Gas	Previous	Current	Difference
CO(%)	0.120733	0.120733	0
CO2(%)	12.03867	12.03867	0
NO(ppm)	1496.273	1496.273	0
THC(ppmC)	297.8733	297.8733	0

Span

InfoVer 1  
Verify Only  
Date 9/28/2007  
Time 12:57:24  
Purge Delay 30  
Gas Path Span

	CO	CO2	O2	HC	NO	NO2	CH4	THC
Bottle Values	0.12	12	20.9	202	1520	504	0	322

Gas	Previous	Current	Difference
NO2(ppm)	551.3267	551.3267	0

Auto-Zero Results:

Start Time 51:26.8  
 Stop Time 53:07.8  
 CH4 Drift Limit 5  
 THC Drift Limit 5  
 Purge Time 30  
 Previous Path SAMPLE  
 Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	0.006	-0.001	0.007	Pass
CO2	0.01	0	0.01	Pass
NO	-10.0733	0.045161	-10.1185	Pass
NO2	6.46667	-0.56129	7.02796	Pass
CH4				
HC	14.1385	0.1	14.0385	Pass
THC				THC Within Drift Limit1

Start Time 51:28.8  
 Stop Time 53:10.8  
 CH4 Drift Limit 5  
 THC Drift Limit 5  
 Purge Time 30  
 Previous Path SAMPLE  
 Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	0.002	-0.000154	0.002154	Pass
CO2	0.018462	0	0.018462	Pass
NO	-0.6	-0.274194	-0.325806	Pass
NO2	10.5	0	10.5	Pass
CH4				
HC	1.66154	-0.738462	2.4	Pass
THC				THC Within Drift Limit1

Start Time 51:30.8  
 Stop Time 53:11.8  
 CH4 Drift Limit 5  
 THC Drift Limit 5  
 Purge Time 30  
 Previous Path SAMPLE  
 Zero Path Ambient Air

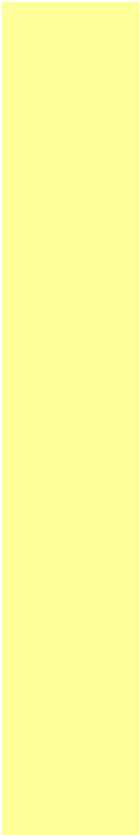
Gas	Previous	Current	Difference	Pass/Fail
CO	0.001308	-0.000154	0.001462	Pass
CO2	0	-0.002308	0.002308	Pass
NO	-0.033333	0.503226	-0.536559	Pass
NO2	4.81	-0.148387	4.95839	Pass
CH4				
HC	1.23846	-1.05385	2.29231	Pass
THC				THC Within Drift Limit1

Start Time	47:35.8
Stop Time	51:10.8
CH4 Drift Limit	5
THC Drift Limit	5
Purge Time	30
Previous Path	SAMPLE
Zero Path	Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	-0.002308	0	-0.002308	Pass
CO2	-0.04	0.01	-0.05	Pass
NO	-5.13548	1.61	-6.74548	Pass
NO2	-21.5677	-1.94	-19.6277	Pass
CH4				
HC	-1.54615	-1.15385	-0.392308	Pass
THC	7.81798	-0.647622	8.4656	Pass1

Test Information:

SEMTECH\_DATA\_ 9/28/2007 17:06.3 [RELEASE\_VER=2.017 BUILD=27 BDATE=09/12/2007 IP=10.10.1.5]



Pre-test







### Post Test Span Results

(alternative calculation method)

CO(%)	1.21%
CO2(%)	0.28%
NO(ppm)	-1.10%
THC(ppmC)	-12.17%
NO2(ppm)	8.33%





(a) & (b)

Audit/Span/Zero Information:

Zero

InfoVer 1  
Date 10/2/2007  
Time 7:19:06  
Purge Delay 30  
Gas Path Sample

Zero

InfoVer 1  
Date 10/2/2007  
Time 7:22:18  
Purge Delay 30  
Gas Path Ambient Air

Gas	Previous	Current	Difference
CO(%)	-0.000687	0.000667	-0.001354
CO2(%)	-0.00125	0	-0.00125
NO(ppm)	-2.40625	0.146667	-2.552917
NO2(ppm)	0.9875	0.066667	0.920833

Span

InfoVer 1  
Date 10/2/2007  
Time 7:24:54  
Purge Delay 30  
Gas Path Span

	CO	CO2	O2	HC	NO	NO2	CH4	THC
Bottle Value	0.12	12	20.9	202	1520	504	0	322

Gas	Previous	Current	Difference
CO(%)	0.123	0.119	0.004
CO2(%)	11.98375	12.02133	-0.037583
NO(ppm)	1530.306	1521.433	8.872917
THC(ppmC)	323.3313	321.8422	1.489028

Span

InfoVer 1  
Date 10/2/2007  
Time 7:31:44  
Purge Delay 30  
Gas Path Span

	CO	CO2	O2	HC	NO	NO2	CH4	THC
Bottle Value	0.12	12	20.9	202	1520	504	0	322

Gas	Previous	Current	Difference
NO2(ppm)	480.2375	507.6867	-27.44917

Audit

Date 10/2/2007  
Time 7:34:05  
Audit Duration 30  
Idle Duration 15

Audit Path	Span		
Idle Path	Ambient Air		
Gas	Bottle	Tol	%Tol
CO (%)	0.02	0.005	3
CO2 (%)	6	0.2	3
O2 (%)	0	0.5	3
HC (ppmC:	0	8	3
NO (ppm)	304	15	3
NO2 (ppm)	0	12	3
CH4 (ppm)	0	0	0
THC (ppmC	31	6	2

Gas	Bottle	Mean Value	Std Dev	Result
CO(%)	0.02	0.020733	0.000458	Passed
CO2(%)	6	6.059333	0.004577	Passed
O2(%)	0	10	0	Not Selected
HC(ppmC3	0	500	0	Not Selected
NO(ppm)	304	250.5067	19.87865	Failed
NO2(ppm)	0	100	0	Not Selected
CH4(ppm)	0	0	0	Not Selected
THC(ppmC	31	29.10667	0.022537	Passed

Audit  
Date 10/2/2007  
Time 7:35:32  
Audit Duration 30  
Idle Duration 15

Audit Path	Span		
Idle Path	Ambient Air		
Gas	Bottle	Tol	%Tol
CO (%)	0.02	0.005	3
CO2 (%)	6	0.2	3
O2 (%)	0	0.5	3
HC (ppmC:	0	8	3
NO (ppm)	295	15	3
NO2 (ppm)	0	12	3
CH4 (ppm)	0	0	0
THC (ppmC	31	6	2

Gas	Bottle	Mean Value	Std Dev	Result
CO(%)	0.02	0.021	0	Passed
CO2(%)	6	6.065333	0.007432	Passed
O2(%)	0	10	0	Not Selected
HC(ppmC3	0	500	0	Not Selected
NO(ppm)	295	278.1267	7.096525	Failed
NO2(ppm)	0	100	0	Not Selected
CH4(ppm)	0	0	0	Not Selected
THC(ppmC	31	28.90889	0.036659	Passed

Zero  
InfoVer 1  
Date 10/2/2007  
Time 13:36:37  
Purge Delay 30

Gas Path Sample

Gas	Previous	Current	Difference
CO(%)	0	0	0
CO2(%)	0	0	0
NO(ppm)	0	0	0
NO2(ppm)	0	0	0
THC(ppmC)	0	0	0

Zero

InfoVer 1  
Date 10/2/2007  
Time 13:36:52  
Purge Delay 30  
Gas Path Ambient Air

Gas	Previous	Current	Difference
CO(%)	0.009938	-0.000533	0.010471
CO2(%)	-0.03	-0.004667	-0.025333
NO(ppm)	-3.49375	1.38	-4.87375
NO2(ppm)	-2.6	0	-2.6
THC(ppmC)	20.2375	4.82	15.4175

Span

InfoVer 1  
Date 10/2/2007  
Time 13:41:00  
Purge Delay 30

Gas Path Span

	CO	CO2	O2	HC	NO	NO2	CH4	THC
Bottle Value	0.12	12	20.9	202	1520	504	0	322

Gas	Previous	Current	Difference
CO(%)	0.1035	0.119067	-0.015567
CO2(%)	12.01875	12.01	0.00875
NO(ppm)	1489.738	1526.227	-36.48917
THC(ppmC)	285.1125	318.3667	-33.25417

**-13.07%**  
**0.07%**  
**-2.39%**  
**-10.45%**

Span

InfoVer 1  
Date 10/2/2007  
Time 13:44:09  
Purge Delay 30

Gas Path Span

	CO	CO2	O2	HC	NO	NO2	CH4	THC
Bottle Value	0.12	12	20.9	202	1520	504	0	322

Gas	Previous	Current	Difference
NO2(ppm)	366.175	515.4133	-149.2383

**-28.96%**

Auto-Zero Results:

Start Time 59:36.8

Stop Time 02:47.8  
CH4 Drift L 5  
THC Drift L 5  
Purge Time 30  
Previous P SAMPLE  
Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	0.004	-0.000462	0.004462	Pass
CO2	0.041539	-0.02	0.061539	Pass
NO	-4.92581	1.44	-6.36581	Pass
NO2	14.6871	-0.953333	15.6404	Pass
CH4				
HC	22.2769	-2.2	24.4769	Pass
THC	-8.21461	-0.472497	-7.74211	Pass1

Start Time 59:38.8  
Stop Time 01:20.8  
CH4 Drift L 5  
THC Drift L 5  
Purge Time 30  
Previous P SAMPLE  
Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	0.002	0.000231	0.001769	Pass
CO2	0.01	-0.01	0.02	Pass
NO	4.86129	0.86	4.00129	Pass
NO2	10.3097	-1.40667	11.7163	Pass
CH4				
HC	4.96154	-1.08462	6.04615	Pass
THC				THC Within Drift Limit1

Start Time 59:40.8  
Stop Time 01:21.8  
CH4 Drift L 5  
THC Drift L 5  
Purge Time 30  
Previous P SAMPLE  
Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	0.000154	0	0.000154	Pass
CO2	0	-0.005385	0.005385	Pass
NO	-2.0871	0.403333	-2.49043	Pass
NO2	6.14516	0	6.14516	Pass
CH4				
HC	2.19231	-1.20769	3.4	Pass
THC				THC Within Drift Limit1

Start Time 14:47.8  
Stop Time 16:29.8  
CH4 Drift L 5  
THC Drift L 5



Purge Time 30  
Previous P SAMPLE  
Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	0.003385	0	0.003385	Pass
CO2	0.01	-0.01	0.02	Pass
NO	-3.42667	0.536667	-3.96333	Pass
NO2	0.41	-0.1	0.51	Pass
CH4				
HC	1.40769	-0.415385	1.82308	Pass
THC				THC Within Drift Limit1

Start Time 14:49.8  
Stop Time 16:32.8  
CH4 Drift L 5  
THC Drift L 5  
Purge Time 30  
Previous P SAMPLE  
Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	0	-0.001846	0.001846	Pass
CO2	-0.01	-0.013077	0.003077	Pass
NO	0.506452	-0.766667	1.27312	Pass
NO2	6.28387	0	6.28387	Pass
CH4				
HC	-1.26923	-0.592308	-0.676923	Pass
THC				THC Within Drift Limit1

Test Information:

SEMTECH 10/2/2007 13:49.3 [RELEASE\_VER=2.017 BUILD=27 BDATE=09/12/2007 IP=10.10.1.55]



pre-test



Post-test

(a)

Audit/Span/Zero Information:

Zero

InfoVer 1  
Date 10/4/2007  
Time 7:34:40  
Purge Dela 30  
Gas Path Ambient Air

Gas	Previous	Current	Difference
CO(%)	0	0.0006	-0.0006
CO2(%)	0	0	0
NO(ppm)	-0.5875	-0.566667	-0.020833
NO2(ppm)	2.9375	0.4	2.5375
THC(ppmC)	-1.05625	-0.206667	-0.849583

Span

InfoVer 1  
Date 10/4/2007  
Time 7:41:58  
Purge Dela 30

Gas Path	Span	CO	CO2	O2	HC	NO	NO2	CH4	THC
Bottle Valu	CO	0.12	12	20.9	202	1520	504	0	322

Gas	Previous	Current	Difference
CO(%)	0.135813	0.119133	0.016679
CO2(%)	11.89188	12	-0.108125
NO(ppm)	1546.638	1517.187	29.45083
THC(ppmC)	312.8646	320.2978	-7.433194

Span

InfoVer 1  
Date 10/4/2007  
Time 7:46:10  
Purge Dela 30

Gas Path	Span	CO	CO2	O2	HC	NO	NO2	CH4	THC
Bottle Valu	CO	0.12	12	20.9	202	1520	504	0	322

Gas	Previous	Current	Difference
NO2(ppm)	547.0813	509.1667	37.91458

Audit

Date 10/4/2007  
Time 7:48:11  
Audit Durat 30  
Idle Duratic 15

Audit Path Span

Idle Path Ambient Air

Gas	Bottle	Tol	%Tol
CO (%)	0.02	0.005	3
CO2 (%)	6	0.2	3
O2 (%)	0	0.5	3

HC (ppmC:	0	8	3
NO (ppm)	295	15	3
NO2 (ppm)	0	12	3
CH4 (ppm)	0	0	0
THC (ppmC	31	6	2

Gas	Bottle	Mean Value	Std Dev	Result
CO(%)	0.02	0.025467	0.000516	Failed
CO2(%)	6	6.024667	0.012459	Passed
O2(%)	0	10		0 Not Selected
HC(ppmC3	0	500		0 Not Selected
NO(ppm)	295	247.6	20.75841	Failed
NO2(ppm)	0	100		0 Not Selected
CH4(ppm)	0	0		0 Not Selected
THC(ppmC	31	29.59111	0.058373	Passed

#### Audit

Date 10/4/2007

Time 7:49:51

Audit Duration 30

Idle Duration 15

Audit Path Span

Idle Path Ambient Air

Gas	Bottle	Tol	%Tol
CO (%)	0.02	0.0051	3
CO2 (%)	6	0.2	3
O2 (%)	0	0.5	3
HC (ppmC:	0	8	3
NO (ppm)	295	16	3
NO2 (ppm)	0	12	3
CH4 (ppm)	0	0	0
THC (ppmC	31	6	2

Gas	Bottle	Mean Value	Std Dev	Result
CO(%)	0.02	0.024333	0.000617	Passed
CO2(%)	6	6.058667	0.003519	Passed
O2(%)	0	10		0 Not Selected
HC(ppmC3	0	500		0 Not Selected
NO(ppm)	295	272.0067	8.710541	Failed
NO2(ppm)	0	100		0 Not Selected
CH4(ppm)	0	0		0 Not Selected
THC(ppmC	31	29.38	0.021082	Passed

#### Auto-Zero Results:

Start Time 57:56.8

Stop Time 01:11.8

CH4 Drift L 5

THC Drift L 5

Purge Time 30

Previous P SAMPLE

Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	0.009769	0	0.009769	Pass
CO2	0.085385	-0.036154	0.121538	Pass
NO	-0.513333	-1.17419	0.66086	Pass
NO2	24.7667	1.16129	23.6054	Pass
CH4				
HC	18.9308	-1.06154	19.9923	Pass
THC	-11.97	-0.147786	-11.8222	Pass1

Start Time 57:59.8  
 Stop Time 59:40.8  
 CH4 Drift L 5  
 THC Drift L 5  
 Purge Time 30  
 Previous P SAMPLE  
 Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	0.006615	0	0.006615	Pass
CO2	0.02	-0.01	0.03	Pass
NO	-1.50333	-0.386667	-1.11667	Pass
NO2	21.0267	0.456667	20.57	Pass
CH4				
HC	-0.346154	0.253846	-0.6	Pass
THC				THC Within Drift Limit1

Start Time 58:01.8  
 Stop Time 59:43.8  
 CH4 Drift L 5  
 THC Drift L 5  
 Purge Time 30  
 Previous P SAMPLE  
 Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	0.01	-0.000308	0.010308	Pass
CO2	-0.05	-0.01	-0.04	Pass
NO	-5.12903	1.13226	-6.26129	Pass
NO2	-5.44194	0	-5.44194	Pass
CH4				
HC	1.96923	-0.053846	2.02308	Pass
THC				THC Within Drift Limit1

Test Information:

SEMTECH 10/4/2007 34:20.5 [RELEASE\_VER=2.017 BUILD=27 BDATE=09/12/2007 IP=10.10.1.55]



Pre-test



(a) and (b)

Audit/Span/Zero Information:

Zero

InfoVer 1  
Date 10/9/2007  
Time 7:34:19  
Purge Delay 30  
Gas Path Ambient Air

Gas	Previous	Current	Difference
CO(%)	0.002875	-0.002	0.004875
CO2(%)	0.01	0	0.01
NO(ppm)	0.48125	1.186667	-0.705417
NO2(ppm)	0.9125	-0.7	1.6125
THC(ppmC)	0.5375	-0.046667	0.584167

Auto-Zero Results:

Start Time 37:57.0  
Stop Time 41:28.0  
CH4 Drift Limit 5  
THC Drift Limit 5  
Purge Time 30  
Previous Path SAMPLE  
Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	0	0.004	-0.004	Pass
CO2	0	0	0	Pass
NO	0.603226	-1.48065	2.08387	Pass
NO2	-1.08387	0.96129	-2.04516	Pass
CH4				
HC	1.21538	0.676923	0.538462	Pass
THC	12.0316	0	12.0316	Pass1

Start Time 37:59.0  
Stop Time 41:37.0  
CH4 Drift Limit 5  
THC Drift Limit 5  
Purge Time 30  
Previous Path SAMPLE  
Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	0.001	-0.001	0.002	Pass
CO2	0	0	0	Pass
NO	1.67667	-2.45161	4.12828	Pass
NO2	12.4333	0.109677	12.3237	Pass
CH4				
HC	3.10769	-0.484615	3.59231	Pass
THC	-3.61846	-0.910881	-2.70758	Pass1

Start Time 55:14.0

Stop Time 56:57.1  
CH4 Drift Limit 5  
THC Drift Limit 5  
Purge Time 30  
Previous Path SAMPLE  
Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	-0.003308	0.000308	-0.003615	Pass
CO2	-0.02	0	-0.02	Pass
NO	-2.83	-0.029032	-2.80097	Pass
NO2	-2.58	-0.006452	-2.57355	Pass
CH4				
HC	4.52308	0.023077	4.5	Pass
THC				THC Within Drift Limit1

Start Time 55:16.1  
Stop Time 56:59.0  
CH4 Drift Limit 5  
THC Drift Limit 5  
Purge Time 30  
Previous Path SAMPLE  
Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	-0.001923	-0.001	-0.000923	Pass
CO2	0.01	0	0.01	Pass
NO	-2.61613	0.386667	-3.0028	Pass
NO2	-19.4484	0.313333	-19.7617	Pass
CH4				
HC	-3.49231	-0.153846	-3.33846	Pass
THC				THC Within Drift Limit1

Start Time 55:19.1  
Stop Time 56:59.0  
CH4 Drift Limit 5  
THC Drift Limit 5  
Purge Time 30  
Previous Path SAMPLE  
Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	0.004	0.000154	0.003846	Pass
CO2	0.009231	0	0.009231	Pass
NO	0.7	0.222581	0.477419	Pass
NO2	20.1	0.006452	20.0935	Pass
CH4				
HC	1.94615	-0.030769	1.97692	Pass
THC				THC Within Drift Limit1

Test Information:

SEMTECH\_DATA\_FI 10/9/2007 28:12.2 [RELEASE\_VER=2.017 BUILD=27 BDATE=09/12/2007 IP=10.10.1.5]

(c)

Audit/Span/Zero Information:

Auto-Zero Results:

Start Time 42:16.0  
Stop Time 43:59.0  
CH4 Drift Limit 5  
THC Drift Limit 5  
Purge Time 30  
Previous Path SAMPLE  
Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	0.003231	-0.001	0.004231	Pass
CO2	-0.01	0	-0.01	Pass
NO	-2.90333	0.464516	-3.36785	Pass
NO2	-7.24333	0.103226	-7.34656	Pass
CH4				
HC	-0.938462	-0.038462	-0.9	Pass
THC				THC Within Drift Limit1

Start Time 42:18.0  
Stop Time 43:59.1  
CH4 Drift Limit 5  
THC Drift Limit 5  
Purge Time 30  
Previous Path SAMPLE  
Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	0.002615	-0.001	0.003615	Pass
CO2	0.01	0	0.01	Pass
NO	-1.32258	-0.26	-1.06258	Pass
NO2	0.5	0	0.5	Pass
CH4				
HC	4.8	-0.076923	4.87692	Pass
THC				THC Within Drift Limit1

Test Information:

SEMTECH\_DATA\_FI 10/9/2007 42:06.9 [RELEASE\_VER=2.017 BUILD=27 BDATE=09/12/2007 IP=10.10.1.5]







(a) & (b)

Audit/Span/Zero Information:

Zero

InfoVer 1

Date 10/11/2007

Time 6:41:02

Purge Delay 30

Gas Path Ambient Air

Gas	Previous	Current	Difference
CO(%)	0.002	0	0.002
CO2(%)	0.01	0	0.01
NO(ppm)	1.6875	-0.5	2.1875
NO2(ppm)	-1.0875	-0.373333	-0.714167
THC(ppmC)	-2.9	-0.466667	-2.433333

Span

InfoVer 1

Date 10/11/2007

Time 6:48:44

Purge Delay 30

Gas Path Span

	CO	CO2	O2	HC	NO	NO2	CH4	THC
Bottle Value	0.12	12	20.9	2004	1520	1520	0	322

Gas	Previous	Current	Difference
CO(%)	0.1192	0.120267	-0.001067
CO2(%)	11.740667	12.024	-0.283333
NO(ppm)	1501.79333	1520.373	-18.58
THC(ppmC)	315.231111	321.2889	-6.057778

Span

InfoVer 1

Date 10/11/2007

Time 6:54:55

Purge Delay 30

Gas Path Span

	CO	CO2	O2	HC	NO	NO2	CH4	THC
Bottle Value	0.12	12	20.9	2004	1520	504	0	322

Gas	Previous	Current	Difference
NO2(ppm)	378.0625	497.1533	-119.0908

Audit

Date 10/11/2007

Time 6:58:56

Audit Duration 30

Idle Duration 15

Audit Path Span

Idle Path Ambient Air

Gas	Bottle	Tol	%Tol
CO (%)	0.02	0.005	3
CO2 (%)	6	0.2	3

O2 (%)	0	0.5	3
HC (ppmC:	0	8	3
NO (ppm)	305	15	3
NO2 (ppm)	0	12	3
CH4 (ppm)	0	0	0
THC (ppmC	31	5	2

Gas	Bottle	Mean Value	Std Dev	Result
CO(%)	0.02	0.0218	0.000414	Passed
CO2(%)	6	5.996	0.019198	Passed
O2(%)	0	10		0 Not Selected
HC(ppmC3	0	500		0 Not Selected
NO(ppm)	305	298.1867	2.829151	Passed
NO2(ppm)	0	100		0 Not Selected
CH4(ppm)	0	0		0 Not Selected
THC(ppmC	31	29.51556	0.017213	Passed

Zero  
InfoVer 1  
Date 10/11/2007  
Time 8:09:09  
Purge Delay 30  
Gas Path Ambient Air

Gas	Previous	Current	Difference
CO(%)	0.002	0	0.002
CO2(%)	0.005	0	0.005
NO(ppm)	4.69375	0.346667	4.347083
NO2(ppm)	5.525	-0.22	5.745
THC(ppmC	-10.8125	-1.586667	-9.225833

Zero  
InfoVer 1  
Date 10/11/2007  
Time 12:57:25  
Purge Delay 30  
Gas Path Ambient Air

Gas	Previous	Current	Difference
CO(%)	0.001545	-0.000267	0.001812
CO2(%)	-0.04	0	-0.04
NO(ppm)	2.154545	-0.073333	2.227879
NO2(ppm)	-1.5	-0.473333	-1.026667
THC(ppmC	-16.990909	-5.026667	-11.96424

Zero  
InfoVer 1  
Date 10/11/2007  
Time 16:01:39  
Purge Delay 30  
Gas Path Ambient Air

Gas	Previous	Current	Difference
CO(%)	0.001	0	0.001



CO2(%)	0.00375	-0.005333	0.009083
NO(ppm)	-1.1125	1.646667	-2.759167
NO2(ppm)	-1.2	-0.2	-1
THC(ppmC)	-11.13125	-3.153333	-7.977917

Span  
InfoVer 1  
Date 10/11/2007  
Time 16:06:12  
Purge Dela 30  
Gas Path Span

	CO	CO2	O2	HC	NO	NO2	CH4	THC
Bottle Valu	0.12	12	20.9	2004	1520	504	0	322

Gas	Previous	Current	Difference
CO(%)	0.116813	0.1198	-0.002987
CO2(%)	11.995	11.99733	-0.002333
NO(ppm)	1506.50625	1523.033	-16.52708
THC(ppmC)	303.983333	322.6444	-18.66111

Span  
InfoVer 1  
Date 10/11/2007  
Time 16:12:46  
Purge Dela 30  
Gas Path Span

	CO	CO2	O2	HC	NO	NO2	CH4	THC
Bottle Valu	0.12	12	20.9	2004	1520	504	0	322

Gas	Previous	Current	Difference
NO2(ppm)	513.975	506.2867	7.688333

Span  
InfoVer 1  
Date 10/11/2007  
Time 16:13:56  
Purge Dela 30  
Gas Path Ambient Air

	CO	CO2	O2	HC	NO	NO2	CH4	THC
Bottle Valu	0.12	12	20.9	2004	1520	504	0	322

Gas	Previous	Current	Difference
O2(%)	8.1	20.9	-12.8

#### Auto-Zero Results:

Start Time 52:57.9  
Stop Time 54:38.9  
CH4 Drift L 5  
THC Drift L 5  
Purge Time 30  
Previous P SAMPLE  
Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	0.00169231	0.001231	0.000462	Pass
CO2	0.00076923	0	0.000769	Pass
NO	1.3	-0.02	1.32	Pass
NO2	2.64667	-0.046667	2.69333	Pass
CH4				
HC	0.2	-0.076923	0.276923	Pass
THC				THC Within Drift Limit1

Start Time 53:00.9  
 Stop Time 01:15.9  
 CH4 Drift L 5  
 THC Drift L 5  
 Purge Time 30  
 Previous P SAMPLE  
 Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	0.00123077	-0.001	0.002231	Pass
CO2	0.03	-0.03	0.06	Pass
NO	-0.351613	0.7	-1.05161	Pass
NO2	8.13871	-1.05333	9.19204	Pass
CH4				
HC	1.10769	-0.723077	1.83077	Pass
THC	105.544	-10.149	115.693	Pass0

Start Time 53:02.9  
 Stop Time 01:44.9  
 CH4 Drift L 5  
 THC Drift L 5  
 Purge Time 30  
 Previous P SAMPLE  
 Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	0.00123077	-0.001538	0.002769	Pass
CO2	0.00692308	-0.029231	0.036154	Pass
NO	0.26	2.01613	-1.75613	Pass
NO2	3.54333	-2.30645	5.84978	Pass
CH4				
HC	1.99231	-1.32308	3.31538	Pass
THC	73.6652	-8.86127	82.5265	Pass0

Start Time 53:04.9  
 Stop Time 01:36.9  
 CH4 Drift L 5  
 THC Drift L 5  
 Purge Time 30  
 Previous P SAMPLE  
 Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO	-0.001	-0.002308	0.001308	Pass

CO2	-0.01	-0.03	0.02	Pass
NO	-1.76129	1.35333	-3.11462	Pass
NO2	1.88387	-0.936667	2.82054	Pass
CH4				
HC	7.62308	-6.01538	13.6385	Pass
THC	69.0931	-8.4921	77.5852	Pass0

Start Time 53:04.9  
 Stop Time 01:20.9  
 CH4 Drift L 5  
 THC Drift L 5  
 Purge Time 30  
 Previous P SAMPLE  
 Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO				
CO2				
NO	-2.42258	1.35	-3.77258	Pass
NO2	5.32903	-2.7	8.02903	Pass
CH4				
HC				
THC	76.6493	-8.2428	84.8921	Pass0

Start Time 53:06.9  
 Stop Time 01:38.9  
 CH4 Drift L 5  
 THC Drift L 5  
 Purge Time 30  
 Previous P SAMPLE  
 Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO				
CO2				
NO	-1.04333	2.5	-3.54333	Pass
NO2	2.31667	-3.11	5.42667	Pass
CH4				
HC				
THC	69.6678	-8.50309	78.1709	Pass0

Start Time 53:09.9  
 Stop Time 54:44.9  
 CH4 Drift L 5  
 THC Drift L 5  
 Purge Time 30  
 Previous P SAMPLE  
 Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO				
CO2				
NO	-0.0433333	0.27	-0.313333	Pass
NO2	2.02	-0.493333	2.51333	Pass

CH4  
HC  
THC

THC Within Drift Limit0

Test Information:

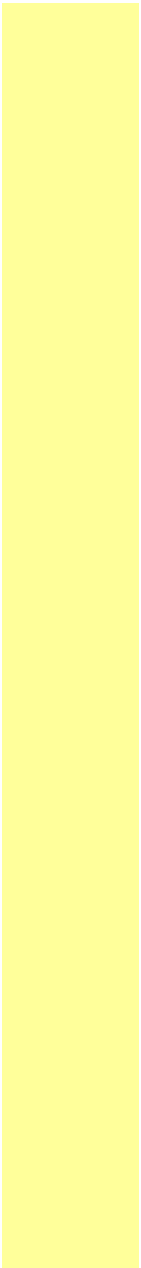
SEMTECH 10/11/2007 40:38.6 [RELEASE\_VER=2.017 BUILD=27 BDATE=09/12/2007 IP=10.10.1.5

No Information Available



pre-test





post-test









# Audit/Span/Zero Information:

Zero

InfoVer 1  
Date 10/13/2007  
Time 1:20:06  
Purge Delay 30  
Gas Path Ambient Air

Gas	Previous	Current	Difference
CO(%)	0.001875	0	0.001875
CO2(%)	0.00625	0	0.00625
NO(ppm)	0.25	0.28	-0.03
NO2(ppm)	-1.93125	-0.066667	-1.864583
THC(ppmC)	-4.66875	-0.653333	-4.015417

Span

InfoVer 1  
Date 10/13/2007  
Time 1:26:56  
Purge Delay 30  
Gas Path Span

	CO	CO2	O2	HC	NO	NO2	CH4
Bottle Values	0.12	12	20.9	2004	1520	504	0

Gas	Previous	Current	Difference
CO(%)	0.119438	0.119533	-0.000096
CO2(%)	11.95375	12.00133	-0.047583
NO(ppm)	1521.1	1521.473	-0.373333
THC(ppmC)	299.114583	322.5556	-23.44097

Span

InfoVer 1  
Date 10/13/2007  
Time 1:32:28  
Purge Delay 30  
Gas Path Span

	CO	CO2	O2	HC	NO	NO2	CH4
Bottle Values	0.12	12	20.9	2004	1520	504	0

Gas	Previous	Current	Difference
NO2(ppm)	528.90625	505.0467	23.85958

Audit

Date 10/13/2007  
Time 1:38:22  
Audit Duration 30  
Idle Duration 15

Audit Path Span  
Idle Path Ambient Air

Gas	Bottle	Tol	%Tol
CO (%)	0.02	0.005	3
CO2 (%)	6	0.2	3

O2 (%)	0	0.5	3
HC (ppmC3)	0	8	3
NO (ppm)	301	15	3
NO2 (ppm)	0	12	3
CH4 (ppm)	0	0	0
THC (ppmC3)	31	5	2

Gas	Bottle	Mean Value	Std Dev	Result
CO(%)	0.02	0.019		0 Passed
CO2(%)	6	5.984667	0.005164	Passed
O2(%)	0	10		0 Not Selected
HC(ppmC3)	0	500		0 Not Selected
NO(ppm)	301	300.2533	0.547549	Passed
NO2(ppm)	0	100		0 Not Selected
CH4(ppm)	0	0		0 Not Selected
THC(ppmC)	31	29.47556	0.044484	Passed

#### Auto-Zero Results:

Start Time	13:10.7
Stop Time	14:45.7
CH4 Drift Limit	5
THC Drift Limit	5
Purge Time	30
Previous Path	SAMPLE
Zero Path	Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO				
CO2				
NO	3.44333	0.206452	3.23688	Pass
NO2	4	-0.096774	4.09677	Pass
CH4				
HC				
THC				THC Within Drift Limit1

Start Time	13:13.7
Stop Time	14:47.7
CH4 Drift Limit	5
THC Drift Limit	5
Purge Time	30
Previous Path	SAMPLE
Zero Path	Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO				
CO2				
NO	1.73667	0.37	1.36667	Pass
NO2	2.16333	-0.09	2.25333	Pass
CH4				
HC				
THC				THC Within Drift Limit1

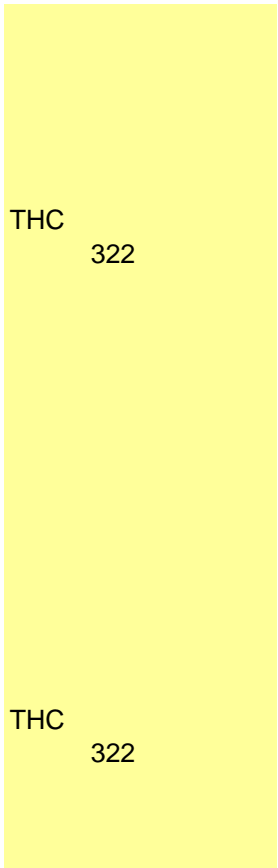
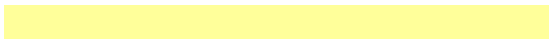
Test Information:

SEMTECH\_DATA\_FILE

10/13/2007

17:32.4 [RELEASE\_VER=2.017 BUILD=27 BDATE=09/12/2007 I

No Information Available



pre-test span

THC  
322

THC  
322



P=10.10.1.55]



(a) & (b) & (c) & (d)

Audit/Span/Zero Information:

Zero

InfoVer 1  
Date 10/15/2007  
Time 0:31:51  
Purge Delay 30  
Gas Path Ambient Air

Gas	Previous	Current	Difference
CO(%)	-0.001375	0.001	-0.002375
CO2(%)	0	-0.009333	0.009333
NO(ppm)	0.4	0.24	0.16
NO2(ppm)	0.325	0.026667	0.298333
THC(ppmC)	0.2125	0.153333	0.059167

Span

InfoVer 1

Date 10/15/2007

Time 0:53:31

Purge Delay 30

Gas Path Span

	CO	CO2	O2	HC	NO	NO2
Bottle Values	0.12	12	20.9	2004	1520	504

Gas	Previous	Current	Difference
CO(%)	0.12175	0.119933	0.001817
CO2(%)	11.961875	11.99333	-0.031458
NO(ppm)	1544.81875	1520.713	24.10542
THC(ppmC)	250.28125	315.3044	-65.02319

Span

InfoVer 1

Date 10/15/2007

Time 1:04:21

Purge Delay 30

Gas Path Span

	CO	CO2	O2	HC	NO	NO2
Bottle Values	0.12	12	20.9	2004	1520	504

Gas	Previous	Current	Difference
NO2(ppm)	500.16875	506.6333	-6.464583

Audit

Date 10/15/2007

Time 1:14:08

Audit Duration 30

Idle Duration 15

Audit Path Span

Idle Path Ambient Air

Gas	Bottle	Tol	%Tol
CO (%)	0.02	0.005	3
CO2 (%)	6	0.2	3
O2 (%)	0	0.5	3

HC (ppmC3)	0	8	3
NO (ppm)	304	15	3
NO2 (ppm)	0	12	3
CH4 (ppm)	0	0	0
THC (ppmC3)	31	5	2

Gas	Bottle	Mean Value	Std Dev	Result
CO(%)		0.02	0.021133	0.000352 Passed
CO2(%)		6	5.981333	0.007432 Passed
O2(%)		0	10	0 Not Selected
HC(ppmC3)		0	500	0 Not Selected
NO(ppm)		304	296.7933	0.980136 Passed
NO2(ppm)		0	100	0 Not Selected
CH4(ppm)		0	0	0 Not Selected
THC(ppmC)		31	28.56444	0.038764 Passed

Zero

InfoVer 1

Date 10/15/2007

Time 7:33:13

Purge Delay 30

Gas Path Ambient Air

Gas	Previous	Current	Difference
CO(%)	0.000063	0	0.000063
CO2(%)	-0.01	-0.002	-0.008
NO(ppm)	3.68125	-0.266667	3.947917
NO2(ppm)	-0.2	0.2	-0.4
THC(ppmC)	-10.00625	-1.353333	-8.652917

Zero

InfoVer 1

Date 10/15/2007

Time 10:24:04

Purge Delay 30

Gas Path Ambient Air

Gas	Previous	Current	Difference
CO(%)	-0.0015	0	-0.0015
CO2(%)	0.01	-0.024	0.034
NO(ppm)	-1.7875	0.813333	-2.600833
NO2(ppm)	0.6	-0.953333	1.553333
THC(ppmC)	-6.2625	-1.006667	-5.255833

Span									
InfoVer 1									
Date 10/15/2007									
Time 10:31:31									
Purge Delay 30									
Gas Path	Span								
	CO	CO2	O2	HC	NO	NO2			
Bottle Values	0.12	12	20.9	2004	1520	504			
Gas	Previous	Current	Difference						

CO(%)	0.115687	0.119	-0.003312							<b>-2.78%</b>
CO2(%)	11.973125	11.998	-0.024875							<b>-0.21%</b>
NO(ppm)	1494.54375	1523.3	-28.75625							<b>-1.89%</b>
THC(ppmC)	229.772917	231.5444	-1.771528							<b>-0.77%</b>
Span										
InfoVer	1									
Date	10/15/2007									
Time	10:40:33									
Purge Delay	30									
Gas Path	Span									
	CO	CO2	O2	HC	NO	NO2				
Bottle Values	0.12	12	20.9	2004	1520	504				
Gas	Previous	Current	Difference							
NO2(ppm)	460.43125	502.54	-42.10875							<b>-8.38%</b>

#### Auto-Zero Results:

Start Time	32:01.7
Stop Time	33:39.7
CH4 Drift Limit	5
THC Drift Limit	5
Purge Time	30
Previous Path	SAMPLE
Zero Path	Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO				
CO2				
NO	0.22	-0.012903	0.232903	Pass
NO2	3.40333	0	3.40333	Pass
CH4				
HC				
THC				THC Within Drift Limit1

Start Time	32:03.7
Stop Time	35:07.7
CH4 Drift Limit	5
THC Drift Limit	5
Purge Time	30
Previous Path	SAMPLE
Zero Path	Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO				
CO2				
NO	2.30667	0.463333	1.84333	Pass
NO2	-0.493333	0.343333	-0.836667	Pass
CH4				
HC				
THC	-6.14708	-0.065135	-6.08194	Pass1

Start Time 32:05.7  
Stop Time 33:42.7  
CH4 Drift Limit 5  
THC Drift Limit 5  
Purge Time 30  
Previous Path SAMPLE  
Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO				
CO2				
NO	0.506452	0.146667	0.359785	Pass
NO2	1.69032	-0.02	1.71032	Pass
CH4				
HC				
THC				THC Within Drift Limit1

Start Time 32:07.7  
Stop Time 33:43.7  
CH4 Drift Limit 5  
THC Drift Limit 5  
Purge Time 30  
Previous Path SAMPLE  
Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO				
CO2				
NO	0.51	0.11	0.4	Pass
NO2	0.6	0.193333	0.406667	Pass
CH4				
HC				
THC				THC Within Drift Limit1

Start Time 32:09.7  
Stop Time 36:07.7  
CH4 Drift Limit 5  
THC Drift Limit 5  
Purge Time 30  
Previous Path SAMPLE  
Zero Path Ambient Air

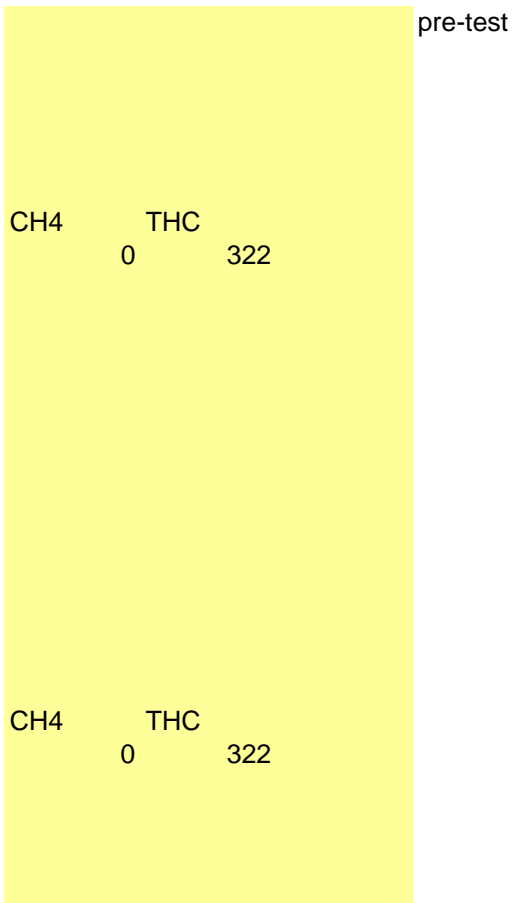
Gas	Previous	Current	Difference	Pass/Fail
CO				
CO2				
NO	-1.21935	0.951613	-2.17097	Pass
NO2	-1.4	-0.1	-1.3	Pass
CH4				
HC				
THC	14.2904	-2.02988	16.3203	Pass1

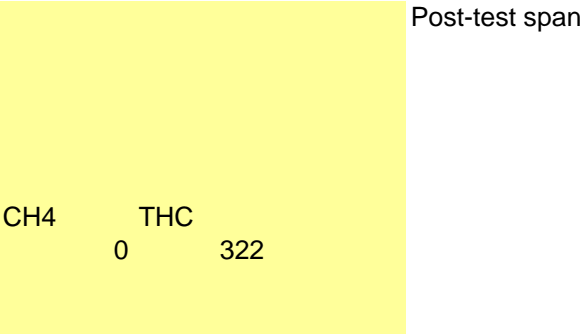
Start Time 42:57.7  
Stop Time 46:54.7  
CH4 Drift Limit 5

THC Drift Limit	5
Purge Time	30
Previous Path	SAMPLE
Zero Path	Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO				
CO2				
NO	-1.16129	0.2	-1.36129	Pass
NO2	2.11613	-0.5	2.61613	Pass
CH4				
HC				
THC	15.043	-1.93822	16.9812	Pass1

Test Information:  
SEMTECH\_DATA\_FIL 10/15/2007 31:36.8 [RELEASE\_VER=2.017 BUILD=27 BDATE=0  
No Information Available





CH4      THC  
0      322





09/12/2007 IP=10.10.1.55]

**(a) and (b)****Audit/Span/Zero Information:**

Zero

InfoVer

1

Date

10/24/2007

Time

6:11:24

Purge Delay

30

Gas Path

Ambient Air

Gas

Previous

Current

Difference

CO(%)

0.000125

-0.000267

0.000392

CO2(%)

0

0

0

NO(ppm)

2.13125

-0.486667

2.617917

NO2(ppm)

0.7

0.353333

0.346667

THC(ppmC)

1.08125

0.126667

0.954583

**Span**

InfoVer

1

Date

10/24/2007

Time

6:19:27

Purge Delay

30

Gas Path

Span

CO

CO2

O2

HC

NO

NO2

Bottle Values

0.12

12

20.9

2004

1520

504

Gas

Previous

Current

Difference

CO(%)

0.122125

0.119133

0.002992

CO2(%)

12.009375

11.962

0.047375

NO(ppm)

1527.73125

1525.82

1.91125

THC(ppmC)

321.508333

321.4111

0.097222

**Audit**

Date

10/24/2007

Time

6:23:48

Audit Duration

30

Idle Duration

15

Audit Path

Span

Idle Path

Ambient Air

Gas

Bottle

Tol

%Tol

CO (%)

0.02

0.005

3

CO2 (%)

6

0.2

3

O2 (%)

0

0.5

3

HC (ppmC3)

0

8

3

NO (ppm)

300

15

3

NO2 (ppm)

0

12

3

CH4 (ppm)

0

0

0

THC (ppmC3)

50

6

2

Gas

Bottle

Mean Value

Std Dev

Result

CO(%)

0.02

0.494133

0.001187

Failed

CO2(%)

6

5.901333

0.005164

Passed

O2(%)

0

10

0

Not Selected

HC(ppmC3)

0

500

0

Not Selected

NO(ppm)

300

286.24

7.151603

Passed

NO2(ppm)	0	100	0	Not Selected
CH4(ppm)	0	0	0	Not Selected
THC(ppmC)	50	199.8644	0.026627	Failed

#### Audit

Date 10/24/2007

Time 6:26:33

Audit Duration 30

Idle Duration 15

Audit Path Span

Idle Path Ambient Air

Gas	Bottle	Tol	%Tol
-----	--------	-----	------

CO (%)	0.02	0.005	3
--------	------	-------	---

CO2 (%)	6	0.2	3
---------	---	-----	---

O2 (%)	0	0.5	3
--------	---	-----	---

HC (ppmC3)	0	8	3
------------	---	---	---

NO (ppm)	300	15	3
----------	-----	----	---

NO2 (ppm)	0	12	3
-----------	---	----	---

CH4 (ppm)	0	0	0
-----------	---	---	---

THC (ppmC3)	50	6	2
-------------	----	---	---

Gas	Bottle	Mean Value	Std Dev	Result
CO(%)	0.02	0.0208	0.000775	Passed
CO2(%)	6	5.985333	0.006399	Passed
O2(%)	0	10		0 Not Selected
HC(ppmC3)	0	500		0 Not Selected
NO(ppm)	300	297.2	7.835177	Passed
NO2(ppm)	0	100		0 Not Selected
CH4(ppm)	0	0		0 Not Selected
THC(ppmC)	50	29.06889	0.044484	Failed

#### Audit

Date 10/24/2007

Time 6:28:05

Audit Duration 30

Idle Duration 15

Audit Path Span

Idle Path Ambient Air

Gas	Bottle	Tol	%Tol
-----	--------	-----	------

CO (%)	0.02	0.005	3
--------	------	-------	---

CO2 (%)	6	0.2	3
---------	---	-----	---

O2 (%)	0	0.5	3
--------	---	-----	---

HC (ppmC3)	0	8	3
------------	---	---	---

NO (ppm)	300	15	3
----------	-----	----	---

NO2 (ppm)	0	12	3
-----------	---	----	---

CH4 (ppm)	0	0	0
-----------	---	---	---

THC (ppmC3)	32	6	2
-------------	----	---	---

Gas	Bottle	Mean Value	Std Dev	Result
CO(%)	0.02	0.0212	0.000414	Passed
CO2(%)	6	5.982	0.009411	Passed
O2(%)	0	10		0 Not Selected
HC(ppmC3)	0	500		0 Not Selected
NO(ppm)	300	298.54	1.564243	Passed

NO2(ppm)	0	100	0 Not Selected
CH4(ppm)	0	0	0 Not Selected
THC(ppmC)	32	28.87556	0.019787 Passed

Span									
InfoVer	1								
Date	10/24/2007								
Time	6:32:02								
Purge Delay	30								
Gas Path	Span								
	CO	CO2	O2	HC	NO	NO2			
Bottle Values		0.12	12	20.9	2004	1520	504		
Gas	Previous	Current	Difference						
NO2(ppm)		474.34375	511.5733	-37.22958					

Zero			
InfoVer	1		
Date	10/24/2007		
Time	12:38:17		
Purge Delay	30		
Gas Path	Ambient Air		
Gas	Previous	Current	Difference
CO(%)	-0.002	-0.0004	-0.0016
CO2(%)	0.000625	0	0.000625
NO(ppm)	1.34375	1.146667	0.197083
NO2(ppm)	-1.76875	-0.546667	-1.222083
THC(ppmC)	3.26875	-1.226667	4.495417

Span									
InfoVer	1								
Date	10/24/2007								
Time	12:47:19								
Purge Delay	30								
Gas Path	Span								
	CO	CO2	O2	HC	NO	NO2			
Bottle Values		0.12	12	20.9	2004	1520	504		
Gas	Previous	Current	Difference						
CO(%)	0.11625	0.119	-0.00275	<b>-2.31%</b>					
CO2(%)	11.94125	11.996	-0.05475	<b>-0.46%</b>					
NO(ppm)	1497.175	1524.413	-27.23833	<b>-1.79%</b>					
THC(ppmC)	287.258333	317.4711	-30.21278	<b>-9.52%</b>					

Span									
InfoVer	1								
Date	10/24/2007								
Time	12:51:23								
Purge Delay	30								
Gas Path	Span								
	CO	CO2	O2	HC	NO	NO2			
Bottle Values		0.12	12	20.9	2004	1520	504		

Gas	Previous	Current	Difference	
NO2(ppm)	497.06875	508.96	-11.89125	<b>-2.34%</b>

Auto-Zero Results:

Start Time 22:17.1  
 Stop Time 29:58.1  
 CH4 Drift Limit 5  
 THC Drift Limit 5  
 Purge Time 30  
 Previous Path SAMPLE  
 Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO				
CO2				
NO	8.70333	2.09032	6.61301	Pass
NO2	8.17333	-1	9.17333	Pass
CH4				
HC				
THC	50.8837	-5.6509	56.5346	Pass1

Start Time 50:33.1  
 Stop Time 58:17.1  
 CH4 Drift Limit 5  
 THC Drift Limit 5  
 Purge Time 30  
 Previous Path SAMPLE  
 Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO				
CO2				
NO	2.05161	2.76774	-0.716129	Pass
NO2	-2.12581	-2.4	0.274194	Pass
CH4				
HC				
THC	40.699	-6.0515	46.7505	Pass1

Start Time 50:36.1  
 Stop Time 58:10.1  
 CH4 Drift Limit 5  
 THC Drift Limit 5  
 Purge Time 30  
 Previous Path SAMPLE  
 Zero Path Ambient Air

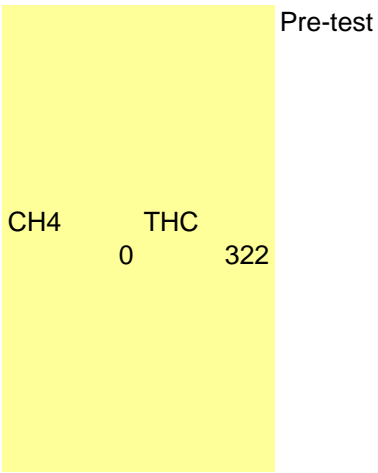
Gas	Previous	Current	Difference	Pass/Fail
CO				
CO2				
NO	0.183333	2.44839	-2.26505	Pass
NO2	2.09667	-2.2	4.29667	Pass
CH4				

HC  
THC

45.6761 -5.86216 51.5383 Pass1

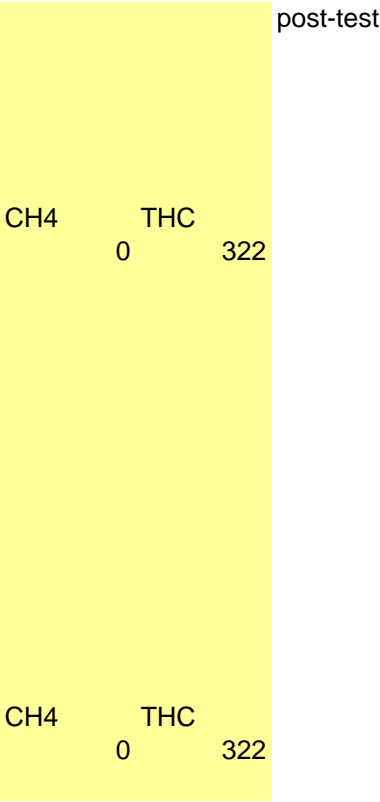
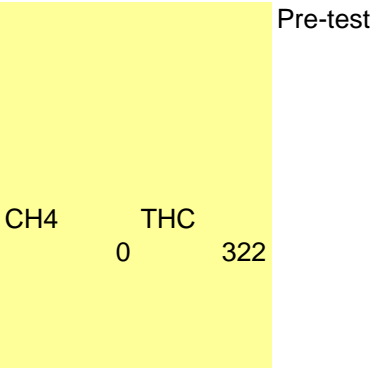
Test Information:  
SEMTECH\_DATA\_  
No Information Available

10/24/2007 10:51.6 [RELEASE\_VER=2.017 BUILD=27 BDATE=0











09/12/2007 IP=10.10.1.55]

(a) & (b) & (c)

Audit/Span/Zero Information:

Zero

InfoVer 1  
Date 10/27/2007  
Time 6:10:55  
Purge Delay 30  
Gas Path Ambient Air

Gas	Previous	Current	Difference
CO(%)	-0.003563	-0.0002	-0.003363
CO2(%)	-0.01	-0.002667	-0.007333
NO(ppm)	-19.25	1.46	-20.71
NO2(ppm)	9.5125	0.973333	8.539167
THC(ppmC)	-1.86875	-0.366667	-1.502083

Span

InfoVer 1  
Date 10/27/2007  
Time 6:23:27  
Purge Delay 30

Gas Path	Span	CO	CO2	O2	HC	NO	NO2	CH4	THC
Bottle Value		0.12	12	20.9	2004	1520	504	0	322

Gas	Previous	Current	Difference
CO(%)	0.12075	0.118933	0.001817
CO2(%)	11.9175	12.02133	-0.103833
NO(ppm)	1532.73125	1525.887	6.844583
THC(ppmC)	348.95	323.4822	25.46778

Audit

Date 10/27/2007  
Time 6:27:09  
Audit Duration 30  
Idle Duration 15

Audit Path Span

Idle Path Ambient Air

Gas	Bottle	Tol	%Tol
CO (%)	0.02	0.005	3
CO2 (%)	6	0.2	3
O2 (%)	0	0.5	3
HC (ppmC)	0	8	3
NO (ppm)	300	15	3
NO2 (ppm)	0	12	3
CH4 (ppm)	0	0	0
THC (ppmC)	32	6	2

Gas	Bottle	Mean Value	Std Dev	Result
CO(%)	0.02	0.019333	0.000488	Passed
CO2(%)	6	6.033333	0.009759	Passed
O2(%)	0	10	0	Not Selected
HC(ppmC)	0	500	0	Not Selected
NO(ppm)	300	300.9133	7.615573	Passed

NO2(ppm)	0	100	0 Not Selected
CH4(ppm)	0	0	0 Not Selected
THC(ppmC)	32	28.66222	0.075453 Passed

Span										
InfoVer	1									
Date	10/27/2007									
Time	6:31:22									
Purge Dela	30									
Gas Path	Span									
	CO	CO2	O2	HC	NO	NO2	CH4	THC		
Bottle Valu	0.12	12	20.9	2004	1520	504	0	322		

Gas	Previous	Current	Difference
NO2(ppm)	481.34375	507.2867	-25.94292

Zero

InfoVer 1

Date 10/27/2007

Time 13:23:45

Purge Dela 30

Gas Path Sample

Gas	Previous	Current	Difference
CO(%)	0	0	0
CO2(%)	0	0	0
NO(ppm)	0	0	0
NO2(ppm)	0	0	0
THC(ppmC)	0	0	0

Zero

InfoVer 1

Date 10/27/2007

Time 13:23:55

Purge Dela 30

Gas Path Ambient Air

Gas	Previous	Current	Difference
CO(%)	0	-0.001	0.001
CO2(%)	0.03125	-0.02	0.05125
NO(ppm)	1.36875	0.5	0.86875
NO2(ppm)	-1.28125	-1.8	0.51875
THC(ppmC)	3.18125	-1.06	4.24125

Span										
InfoVer	1									
Date	10/27/2007									
Time	13:27:38									
Purge Dela	30									
Gas Path	Span									
	CO	CO2	O2	HC	NO	NO2	CH4	THC		
Bottle Valu	0.12	12	20.9	2004	1520	504	0	322		

Gas	Previous	Current	Difference
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[illegible]

Auto-Zero Results:

Start Time	55:40.0
Stop Time	59:51.0
CH4 Drift L	5
THC Drift L	5
Purge Time	30
Previous P SAMPLE	
Zero Path	Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO				
CO2				
NO	23.7	1.67667	22.0233	Pass
NO2	-28.6733	-10.8433	-17.83	Pass
CH4				
HC				
THC	15.9194	-1.80548	17.7248	Pass1

Start Time	42:23.0
Stop Time	45:28.0
CH4 Drift L	5
THC Drift L	5
Purge Time	30
Previous P SAMPLE	
Zero Path	Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO				
CO2				
NO	2.13871	-0.33	2.46871	Pass
NO2	1.31935	2.42333	-1.10398	Pass
CH4				
HC				
THC	-7.27531	-0.357701	-6.91761	Pass1

Start Time 15:43.0  
Stop Time 19:32.1  
CH4 Drift L 5  
THC Drift L 5  
Purge Time 30  
Previous P SAMPLE  
Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO				
CO2				
NO	-0.6	0.364516	-0.964516	Pass
NO2	-16.8967	-0.070968	-16.8257	Pass
CH4				
HC				
THC	16.4726	-1.69633	18.169	Pass1

Start Time 15:45.0  
Stop Time 17:20.1  
CH4 Drift L 5  
THC Drift L 5  
Purge Time 30  
Previous P SAMPLE  
Zero Path Ambient Air

Gas	Previous	Current	Difference	Pass/Fail
CO				
CO2				
NO	0.973333	0.509677	0.463656	Pass
NO2	11.6233	-0.367742	11.9911	Pass
CH4				
HC				
THC				THC Within Drift Limit1

Test Information:

SEMTECH 10/27/2007 49:05.8 [RELEASE\_VER=2.017 BUILD=27 BDATE=09/12/2007 IP=10.10.1.5]  
No Information Available





pre-test

pre-test

post-test



