



# Validation of a Successful Test Run

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## SNIA Emerald™ Training

*SNIA Emerald Power Efficiency  
Measurement Specification,  
for use in EPA ENERGY STAR®*

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# Validation of a Successful Test Run

- Valid Test Runs are ascertained by examination of 3 files.
  - ◆ Power analyzer CVS output file
  - ◆ Vdbench Flatfile output (HTML format)
  - ◆ Ivp output file (Text format either Wordpad or Notepad)

## ➤ Verification of Power Analyzer CSV Output File

- ◆ Start Time of Power Logging (at least 1 minute before IO starts)
- ◆ Increase in power consumption at the start of IO load (P-1)
- ◆ Sufficient logging time to capture 5 – 41 minute active IO tests plus 2 hours of ready idle (note fill phase need not be measured) for a minimum log time of 325 minutes (5 hrs, 25 minutes)

## ➤ Power Analyzer CSV Output File

No. - Sequence Number

Date - Calendar Date

Time - Time of Day

Msec - milliseconds after time

U-1 - Input Voltage (volts)

I-1 - Input Current (amps)

P-1 - Active Power (Watts)

S-1 - Apparent Power (VA) not used

Q-1 - Reactive Power (var) not used

# Power Analyzer Output

## ➤ Power Analyzer CSV Output File

No.	Date	Time	Msec	U-1	I-1	P-1	S-1	Q-1
1	4/30/2015	12:04:08	407	239.91	1.863	359.30	446.90	-2.66E+02
2	4/30/2015	12:04:13	405	239.91	1.8618	358.90	446.70	-2.66E+02
3	4/30/2015	12:04:18	405	239.91	1.8587	358.10	445.90	-2.66E+02
4	4/30/2015	12:04:23	405	239.91	1.8584	358.00	445.90	-2.66E+02
5	4/30/2015	12:04:28	405	239.91	1.8576	357.80	445.70	-2.66E+02
6	4/30/2015	12:04:33	404	239.91	1.8576	357.80	445.70	-2.66E+02

## ➤ Verification of Vdbench Flat file HTML Output File

- ◆ Start time of HB Warmup (at least one minute after start of power log)
- ◆ Verification of presence and duration of all test phases (fill phase, if needed)
- ◆ Hot Band Conditioning (12 hr minimum)
- ◆ Hot Band Warmup (10 minute minimum)
- ◆ Hot Band Final (measurement 30 minute minimum)
- ◆ Random Read (mixed100) Warmup (10 minute minimum)
- ◆ Random Read Final (measurement 30 minute minimum)
- ◆ Random Write (mixed000) Warmup (10 minute minimum)
- ◆ Random Write Final (measurement 30 minute minimum)
- ◆ Sequential Write (seq000) Warmup (10 minute minimum)
- ◆ Sequential Write Final (measurement 30 minute minimum)
- ◆ Sequential Read (seq100) Warmup (10 minute minimum)
- ◆ Sequential Read Final (measurement 30 minute minimum)

## ➤ Vdbench Flat file HTML Output File

- \* Run: Name of run from RD=
- \* Interval: Reporting interval number
- \* reqrate : Requested i/o rate
- \* rate : Observed i/o rate
- \* MB/sec : Megabytes per second (MB=1024\*1024)
- \* bytes/io : Average data transfersize
- \* read% : Observed read percentage
- \* resp : Observed response time
- \* read\_resp : Observed read response time
- \* write\_resp : Observed write response time
- \* resp\_max : Observed maximum response time
- \* resp\_std : Standard deviation
- \* xfersize : data transfer size requested
- \* threads : number of threads requested

# Vdbench Output



## Vdbench Flat file HTML Output File

tod	Run	Interval	reqrate	rate	MB/sec	bytes/io	read%	resp	read_resp	write_resp	resp_max	resp_std	xfersize	threads
12:07:03.216	rd1_hband_cond	1	999988.0000	41514.7500	1175.2777	29685	65.8349	4.7747	6.0421	2.3324	93.4500	3.7837	8192	200.0000
12:08:03.085	rd1_hband_cond	2	999988.0000	41497.9833	1173.5970	29654	65.8037	4.7879	6.0478	2.3634	52.6660	3.7913	8192	200.0000
12:09:03.084	rd1_hband_cond	3	999988.0000	41528.4167	1175.2206	29673	65.8566	4.7903	6.0613	2.3387	55.7560	3.7922	8192	200.0000
12:10:03.075	rd1_hband_cond	4	999988.0000	41524.6500	1175.5415	29684	65.8353	4.7900	6.0831	2.2981	62.5270	3.8152	8192	200.0000
12:11:03.070	rd1_hband_cond	5	999988.0000	41558.3167	1174.1820	29626	65.7932	4.7869	6.0567	2.3444	80.8770	3.8224	8192	200.0000
12:12:03.077	rd1_hband_cond	6	999988.0000	41474.0333	1176.4327	29743	65.8052	4.7964	6.0756	2.3347	62.5280	3.8214	8192	200.0000
12:13:03.065	rd1_hband_cond	7	999988.0000	41540.6000	1174.7212	29652	65.7564	4.7886	6.0390	2.3876	70.0740	3.7983	8192	200.0000
12:14:03.065	rd1_hband_cond	8	999988.0000	41750.9833	1180.5698	29650	65.7494	4.7641	6.0089	2.3746	102.9760	3.8112	8192	200.0000



# Data Reduction Tool Output



## ivp Text Output File

SEQUENCE	START	END	WATTS	IOPS/W	MiBPS/W	RRESP	WRESP	XFERSIZE	NLINES	MAX PER	VAR %
1 rd1_hband_cond	12:08:13	00:16:11	424.62	98.23	2.78	5.9987	2.4035	8192	729	-00.66	+90.48
3 rd1_hband_final	00:28:11	00:57:11	424.05	97.64	2.76	6.0396	2.4268	8192	30	-00.29	+00.86
5 rd1_mixed100_final	01:09:11	01:38:11	419.35	277.97	2.17	6.0270	0.0000	8192	30	-00.24	+00.18
7 rd1_mixed000_final	01:50:11	02:19:11	443.99	95.30	0.74	0.0000	11.9023	8192	30	-03.08	+01.59
9 rd1_seq000_final	02:31:11	03:00:10	424.24	10.82	2.71	0.0000	10.4289	262144	30	-03.28	+02.26
11 rd1_seq100_final	03:12:10	03:41:10	380.84	10.80	2.70	5.8227	0.0000	262144	30	-00.24	+00.49
12 idle	03:43:10	05:48:15	355.84	0.00	0.00	0.0000	0.0000	0	126	-00.00	+00.00

Overall response time: 3.91 ms

RESULT: This run passes the stability tests.  
It is eligible for Emerald or EPA submission.

# Questions / Comments



➤ Q&A