TOYO Corporation

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ACCREDITED
CALIBRATION
CERTIFICATE NO.2296.01

Calibration Report

Report number: Sample

Model: Portable One
Serial Number: Sample

Data Type: **AS RECEIVED**
Date of Cal: 28-Feb-2008

Program:
P1-ATS1Cal-apc.apb 1.00

Option Status

IMD	Not Installed
EURZ	Not Installed
PDX	Installed
P1D	Installed

Explanatory notes to the last three columns of the calibration report

"MU" - The column labled "**MU**" lists the expanded measurement uncertainties derived from published specifications of the calibration equipment, resolution factors, and statistical data of repeatability which may include inter-lab comparisons and/or other information. These are based on a coverage factor of 2 (k=2) corresponding to a confidence level of 95%.

"TUR" - The column labled "**TUR**" lists the test uncertainty ratio calculated by dividing the lesser of the lower and upper reading tolerances by the expanded measurement uncertainty. An entry of "**na**" indicates [1] the specified limits are one-sided, or [2] the performance characteristic is a self-test or system specification that is not independently certifiable.

"Result" - The column labeled "Result" lists color-coded assessments that the observed characteristic is within its specified limits of performance. There are three possible indications:

pass -- *The READING is within the specified upper and lower limits reduced by guard-bands equal to the expanded measurement uncertainty or "MU". The confidence level is 95% or higher the observed characterisitc is within specification.*

pass (<95%) -- *The READING is within the specified upper and lower limits, but it is close to one of the limits by an amount that is less than the expanded measurement uncertainty or "MU". Conformance to specification is more probable than not, however the confidence level may be <95%.*

>> FAIL << -- *The observed characteristic is out of specification.*

This report is valid only when accompanied by a signed Certificate of Calibration.

File name: P1-ATS1Report-apc.xls File version: REV1.00-18FEB2008-SR

Item	Setting(s)	Lower Limit	READING	Upper Limit	MU	TUR	Result
ANALOG GENERATOR CHARACTERISTICS							
[1] Sine Frequency Accuracy (Hz, kHz)							
	10 Hz	9.950	**10.005**	10.050	0.005	>10	**pass**
	100 Hz	99.50	**99.97**	100.50	0.05	>10	**pass**
	1.00 kHz	0.9950	**0.9997**	1.0050	0.0005	>10	**pass**
	10.0 kHz	9.950	**9.998**	10.050	0.005	>10	**pass**
	100 kHz	99.50	**99.98**	100.50	0.05	>10	**pass**
[2] Sine Amplitude Accuracy at 1 kHz (Volts, mVolts)							
Channel A	10.0 V	9.7700	**10.0166**	10.2300	0.0061	>10	**pass**
	2.50 V	2.4425	**2.5016**	2.5575	0.0015	>10	**pass**
	1.00 V	0.9770	**1.0005**	1.0230	0.0020	>10	**pass**
	250 mV	244.25	**250.73**	255.75	0.50	>10	**pass**
	100 mV	97.70	**100.25**	102.30	0.20	>10	**pass**
	25 mV	24.425	**25.081**	25.575	0.050	>10	**pass**
	10 mV	9.770	**10.049**	10.230	0.020	>10	**pass**
Channel B	10.0 V	9.7700	**10.0165**	10.2300	0.0061	>10	**pass**
	2.50 V	2.4425	**2.5016**	2.5575	0.0015	>10	**pass**
	1.00 V	0.9770	**1.0005**	1.0230	0.0020	>10	**pass**
	250 mV	244.25	**250.73**	255.75	0.50	>10	**pass**
	100 mV	97.70	**100.25**	102.30	0.20	>10	**pass**
	25 mV	24.425	**25.081**	25.575	0.050	>10	**pass**
	10 mV	9.770	**10.050**	10.230	0.020	>10	**pass**
[3] Sine Flatness at 2.5 Volts (dB)							
Channel A	10 Hz	-0.0500	**0.0169**	0.0500	0.0026	>10	**pass**
	20 Hz	-0.0500	**0.0052**	0.0500	0.0026	>10	**pass**
	20 kHz	-0.0500	**-0.0008**	0.0500	0.0027	>10	**pass**
	50 kHz	-0.3000	**-0.0132**	0.3000	0.0037	>10	**pass**
	120 kHz	-0.300	**-0.017**	0.300	0.028	>10	**pass**
[4] Sine THD+N (dB) - self test							
26.25V, 80k BW	25 Hz	-999	**-98.7**	-92.0	2.0	na	**pass**
	1 kHz	-999	**-98.5**	-92.0	2.0	na	**pass**
	20 kHz	-999	**-96.3**	-92.0	2.0	na	**pass**
1.00V, Full BW	10 Hz	-999	**-99.4**	-80.0	2.0	na	**pass**
	50 kHz	-999	**-90.4**	-80.0	2.0	na	**pass**
[5] Squarewave Amplitude Accuracy (Volts)							
	1.00 V, 100 Hz	1.3647	**1.4232**	1.4637	0.0024	>10	**pass**
[6] Source Resistance Accuracy (Ohms)							
Channel A	40 Ohm Unbal	38.00	**41.03**	42.00	0.020	>10	**pass**
	40 Ohm Bal	38.00	**41.15**	42.00	0.020	>10	**pass**
	150 Ohm Bal	148.00	**151.04**	152.00	0.040	>10	**pass**
	600 Ohm Bal	598.00	**601.13**	602.00	0.12	>10	**pass**
Channel B	40 Ohm Unbal	38.00	**40.91**	42.00	0.020	>10	**pass**
	40 Ohm Bal	38.00	**41.03**	42.00	0.020	>10	**pass**
	150 Ohm Bal	148.00	**150.93**	152.00	0.040	>10	**pass**
	600 Ohm Bal	598.00	**601.24**	602.00	0.12	>10	**pass**
ANALOG ANALYZER CHARACTERISTICS							
[7] Input Termination Accuracy (Ohms)							
Channel A	600 Ohms	594.00	**603.15**	606.00	0.12	>10	**pass**
Channel B	600 Ohms	594.00	**603.74**	606.00	0.12	>10	**pass**
[8] Input Common Mode Rejection (dB)							
Channel A	2.5V range, 50 Hz	-999	**-103.5**	-70.0	2.0	na	**pass**
	2.5V range, 1 kHz	-999	**-95.4**	-70.0	2.0	na	**pass**
	2.5V range, 20 kHz	-999	**-72.1**	-70.0	2.0	na	**pass**
	10V range, 1kHz	-999	**-75.4**	-50.0	2.0	na	**pass**
	25V range, 1 kHz	-999	**-75.4**	-50.0	2.0	na	**pass**
	100V range, 1kHz	-999	**-74.8**	-50.0	2.0	na	**pass**
	250V range, 1kHz	-999	**-67.2**	-50.0	2.0	na	**pass**
Channel B	2.5V range, 50 Hz	-999	**-73.7**	-70.0	2.0	na	**pass**
	2.5V range, 1 kHz	-999	**-73.7**	-70.0	2.0	na	**pass**
	2.5V range, 20 kHz	-999	**-72.7**	-70.0	2.0	na	**pass**
	10V range, 1kHz	-999	**-63.7**	-50.0	2.0	na	**pass**
	25V range, 1 kHz	-999	**-63.2**	-50.0	2.0	na	**pass**
	100V range, 1kHz	-999	**-64.2**	-50.0	2.0	na	**pass**
	250V range, 1kHz	-999	**-63.3**	-50.0	2.0	na	**pass**

Item	Setting(s)	Lower Limit	READING	Upper Limit	MU	TUR	Result
ANALOG ANALYZER, Continued							
[9] Level/Amplitude Meter Accuracy at 1 kHz (Volts, mVolts)							
Channel A	140 V	138.4	**139.7**	141.6	0.2	8.0	**pass**
	60 V	59.31	**59.87**	60.69	0.06	>10	**pass**
	20 V	19.77	**19.96**	20.23	0.02	>10	**pass**
	6 V	5.931	**5.984**	6.069	0.006	>10	**pass**
	2 V	1.977	**1.996**	2.023	0.002	>10	**pass**
	600 mV	593.0	**598.7**	607.0	0.6	>10	**pass**
	200 mV	197.6	**199.6**	202.4	0.2	>10	**pass**
	60 mV	59.21	**59.69**	60.79	0.06	>10	**pass**
	10 mV	9.79	**9.95**	10.22	0.01	>10	**pass**
Channel B	140 V	138.4	**139.9**	141.6	0.2	8.0	**pass**
	60 V	59.31	**59.93**	60.69	0.06	>10	**pass**
	20 V	19.77	**19.96**	20.23	0.02	>10	**pass**
	6 V	5.931	**5.989**	6.069	0.006	>10	**pass**
	2 V	1.977	**1.998**	2.023	0.002	>10	**pass**
	600 mV	593.0	**599.1**	607.0	0.6	>10	**pass**
	200 mV	197.6	**199.6**	202.4	0.2	>10	**pass**
	60 mV	59.21	**59.83**	60.79	0.06	>10	**pass**
	10 mV	9.79	**9.97**	10.22	0.01	>10	**pass**
[10] Level/Amplitude Meter Flatness at 2 Volts (dB)							
Channel A	10 Hz	-0.200	**-0.009**	0.200	0.020	10	**pass**
	20 Hz	-0.050	**0.004**	0.050	0.010	5.0	**pass**
	20 kHz	-0.050	**0.000**	0.050	0.010	5.0	**pass**
	50 kHz	-0.200	**-0.035**	0.200	0.010	>10	**pass**
	120 kHz	-0.500	**-0.283**	0.500	0.027	>10	**pass**
Channel B	10 Hz	-0.200	**-0.048**	0.200	0.020	10	**pass**
	20 Hz	-0.050	**-0.009**	0.050	0.010	5.0	**pass**
	20 kHz	-0.050	**0.000**	0.050	0.010	5.0	**pass**
	50 kHz	-0.200	**0.009**	0.200	0.010	>10	**pass**
	120 kHz	-0.500	**0.052**	0.500	0.027	>10	**pass**
[11] Bandwidth Limiting Filters (dB)							
22 Hz - 22 kHz	22.4 Hz	-6.00	**-1.32**	0.00	0.04	na	**pass**
	31.5 Hz	-0.50	**-0.06**	0.50	0.04	>10	**pass**
	16 kHz	-0.50	**-0.19**	0.50	0.04	>10	**pass**
	22.4 kHz	-6.00	**-4.04**	0.00	0.04	na	**pass**
400 Hz Highpass	400 Hz	-3.70	**-3.18**	-2.40	0.04	na	**pass**
30 kHz Lowpass	30 kHz	-3.70	**-3.15**	-2.40	0.04	na	**pass**
80 kHz Lowpass	80 kHz	-3.70	**-3.33**	-2.40	0.04	na	**pass**
[12] Noise Weighting Filters (dB)							
A-Weighting	100 Hz	-20.10	**-19.27**	-18.10	0.04	na	**pass**
	1 kHz	-0.20	**-0.08**	0.20	0.02	10	**pass**
	10 kHz	-6.50	**-2.56**	-0.50	0.04	na	**pass**
CCIR-RMS	100 Hz	-20.80	**-19.84**	-18.80	0.04	na	**pass**
	1 kHz	-0.20	**0.01**	0.20	0.02	10	**pass**
	6.3 kHz	11.70	**12.19**	12.70	0.04	na	**pass**
	12.5 kHz	-1.20	**-0.17**	1.20	0.04	>10	**pass**
CCIR-QPK	1 kHz	-0.20	**0.09**	0.20	0.02	10	**pass**
CCIR-ARM	2 kHz	-0.20	**-0.04**	0.20	0.02	10	**pass**
[13] Residual Noise (uVolts) - self test							
Channel A	22-22k BW	0	**1.01**	1.50	0.06	na	**pass**
	A-weighted	0	**0.72**	1.00	0.06	na	**pass**
	CCIR-qpk	0	**3.21**	5.00	0.20	na	**pass**
Channel B	22-22k BW	0	**1.01**	1.50	0.06	na	**pass**
	A-weighted	0	**0.72**	1.00	0.06	na	**pass**
	CCIR-qpk	0	**3.19**	5.00	0.20	na	**pass**
[14] Selective Amplitude Accuracy at 1.00 Vrms (dBV)							
	20 Hz	-0.30	**-0.08**	0.30	0.02	>10	**pass**
	1 kHz	-0.30	**0.00**	0.30	0.02	>10	**pass**
	20 kHz	-0.30	**-0.04**	0.30	0.02	>10	**pass**
	120 kHz	-0.30	**-0.16**	0.30	0.05	6.0	**pass**

Item	Setting(s)	Lower Limit	READING	Upper Limit	MU	TUR	Result
ANALOG ANALYZER, Continued							
[15] THD+N/SINAD Accuracy (dBV)							
20 Hz notch	40 Hz	-1.00	**-0.39**	1.00	0.02	>10	**pass**
	60 Hz	-1.00	**-0.14**	1.00	0.02	>10	**pass**
	1 kHz	-1.00	**-0.03**	1.00	0.02	>10	**pass**
	20 kHz	-1.00	**-0.02**	1.00	0.02	>10	**pass**
1 kHz notch	20 Hz	-1.00	**-0.10**	1.00	0.02	>10	**pass**
	2.0 kHz	-1.00	**-0.35**	1.00	0.02	>10	**pass**
	3.0 kHz	-1.00	**-0.12**	1.00	0.02	>10	**pass**
	20 kHz	-1.00	**-0.03**	1.00	0.02	>10	**pass**
20 kHz notch	1 kHz	-1.00	**-0.03**	1.00	0.02	>10	**pass**
	40 kHz	-1.00	**-0.39**	1.00	0.02	>10	**pass**
	60 kHz	-1.00	**-0.18**	1.00	0.02	>10	**pass**
	120 kHz	-1.00	**-0.28**	1.00	0.05	>10	**pass**
[16] - Phase Measurement Offset (Degrees)							
	10 Hz	-5.0	**-0.1**	5.0	0.6	8.3	**pass**
	20 Hz	-2.0	**-0.1**	2.0	0.2	10	**pass**
	1 kHz	-2.0	**-0.1**	2.0	0.2	10	**pass**
	20 kHz	-2.0	**-0.5**	2.0	0.2	10	**pass**
	50 kHz	-5.0	**0.0**	5.0	0.2	>10	**pass**
[17] Frequency Measurement Accuracy (µHz/Hz)							
	9.900 kHz	-100.0	**-36.1**	100.0	10.0	10	**pass**
[18] Input Residual Crosstalk at 20 kHz (dB)							
Ch B into Ch A		-999	**-132.3**	-120.0	6.0	na	**pass**
Ch A into Ch B		-999	**-148.7**	-120.0	6.0	na	**pass**
[19] Residual Wow & Flutter (%) - self-test							
IEC	Weighted	0%	**0.000%**	0.005%	0.001%	na	**pass**
	Unweighted	0%	**0.000%**	0.010%	0.001%	na	**pass**
OPTION "IMD" RELATED			**>> Option Not Installed**				
[20] Generator IMD Amplitude Accuracy at 1.000 Vrms (Volts)							
SMPTE 4:1	70Hz/8kHz						
[21] Residual SMPTE IMD (%) - self test							
Channel A	25.25 V						
	1.00 V						
Channel B	25.25 V						
	1.00 V						
AES/EBU DIGITAL I/O CHARACTERISTICS							
[22] Output Voltage Accuracy (Volts, mVolts) - oscilloscope referenced							
Balanced	4.00 Vpp	3.520	**4.016**	4.480	0.050	9.6	**pass**
	0.40 Vpp	0.280	**0.414**	0.520	0.005	>10	**pass**
Unbalanced	1.50 Vpp	1.330	**1.420**	1.670	0.022	6.4	**pass**
	0.20 Vpp	0.160	**0.192**	0.240	0.003	>10	**pass**
[23] Input Voltage Measurement Accuracy (Volts) - oscilloscope referenced							
Balanced	4.00 Vpp	3.55	**4.06**	4.45	0.06	4.2	**pass**
	0.40 Vpp	0.31	**0.43**	0.49	0.01	>10	**pass**
Unbalanced	1.50 Vpp	1.32	**1.53**	1.68	0.02	4.4	**pass**
	0.20 Vpp	0.15	**0.21**	0.25	0.01	>10	**pass**
[24] Jitter Accuracy at 500Hz, 48ks (UI) - self test							
	2.450 UIpk	2.165	**2.499**	2.735	0.040	na	**pass**
	0.510 UIpk	0.419	**0.505**	0.601	0.010	na	**pass**
	0.170 UIpk	0.113	**0.174**	0.227	0.004	na	**pass**
[25] Jitter Flatness at 0.3 UI, 48 ks (dB) - self test							
	100 Hz	-1.50	**0.89**	1.50	0.10	na	**pass**
	200 Hz	-1.50	**0.47**	1.50	0.10	na	**pass**
	2.5 kHz	-1.50	**0.09**	1.50	0.10	na	**pass**
	5 kHz	-1.50	**0.12**	1.50	0.10	na	**pass**
	10 kHz	-1.50	**0.17**	1.50	0.10	na	**pass**
	22 kHz	-1.50	**0.06**	1.50	0.14	na	**pass**
[26] Residual Jitter, 700 Hz to 30 kHz BW, 48 ks (nsec) - self test							
	RMS	0	**0.17**	0.81	0.10	na	**pass**
	PEAK	0	**0.44**	2.43	0.20	na	**pass**

END OF REPORT