Attachment XI

Title:	TEST REPORT, Spinal Pak® output characterization (EN371)	Effective: 11/28/05
Device:	SpinalPak®, SpinalPak II®, OrthoPak®	

PURPOSE/SCOPE: Perform a comparative analysis of the outputs of multiple SpinalPak II devices, at least one SpinalPak device and one OthoPak device. Spectrum analysis, voltage, current, frequency, and waveform shape are to be included. Scope pictures of all waveforms and spectrums need to be included in the test report. Both AAMI (NS4-1985) and resistive test loads will be used. All measurements will be taken at the connection point of the load circuit, external to the devices.

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DEFINITIONS/ABBREVIATIONS:

Define term(s) here as necessary (Bug = Unresolved Anomaly)

SP1 = SpinalPak device

SP2 = SpinalPak II device

OP = Ortho Pak device

TEST OVERVIEW:

Preliminary: Perform the entire suite of tests on one device, then repeat for the next device, etc. The SpinalPak should be the first device tested. All setup information for each piece of test equipment is to be

recorded at each point in the preliminary test sequence, so that each subsequent device is tested with exactly the same configurations.

When testing the Spinal Pak II devices, do not leave the devices powered any longer than needed, as they have an unknown number of hours remaining before they disable themselves.

All measurements of output voltage, current, and frequency should be done using the LeCroy oscilloscope, so that the automatic calculation capability can be utilized. Voltage and current measurements should be done with RMS values shown. Frequency measurements should include standard deviation, min, and max values.

Device Serial Numbers to be tested: Additional entries should be added when additional devices are supplied by RSMedical.

Mfgr./Model	Serial Number
SpinalPak	S/N S13787
SpinalPak	S/N A65120
OrthoPak	S/N 62021
SpinalPak II	S/N 015625,
SpinalPak II	S/N 019235
SpinalPak II	S/N 005602
SpinalPak II	S/N 009914 (Note: Device received after Spectrum tests were completed, and was not included in Section 2 testing)

TEST EQUIPMENT USED:

Nomenclature	Mfgr./Model	SW Version	Serial Number	Calibration Due
Oscilloscope	LeCroy/Waverunner 6050	3.7.0.4 nsis (build 61612)	LCRY0602P13234	5/6/06
DMM	Tektronix/TX1	N/A	01249	5/5/06
Thermal chamber	JC Systems/600-TC/LIN(4-20mA)		92070619	8/17/06
DC Milli-Ohm Meter	GW Instek/GOM-802	N/A	CD151041	05/06/2006
Infrared Temp Probe	Fluke/80T-IR	N/A	380171	Reference Only
Power Supply	HP/E3634 A	N/A	KR94800581	Reference Only

SPL Meter	CheckMate/CM-130	N/A	030700084	Reference Only

DETAILED TESTS:

1. Test: Waveform measurements

1.1. Device output to be connected directly to the test load. No electrode pads as used for treatment will be in the circuit, as these items are being characterized separately.

1.2. Power supply configurations

1.2.1. Each device (SpinalPak and OrthoPak) will be tested with 3 different power supply configurations.

1.2.1.1. New 9 Volt battery

1.2.1.2. Regulated bench power supply set to 9.0 Vdc

1.2.1.3. Regulated bench power supply set to 6.0 Vdc

1.2.1.4. Use clip leads to connect to the 9v battery connector in the device.

1.2.2. Each device (SpinalPakII) will be tested with 3 different power supply configurations.

1.2.2.1. Fully charged battery (allow to cool to room temp before using)

1.2.2.2. Regulated bench power supply set to 1.40 Vdc

1.2.2.3. Regulated bench power supply set to 1.1 Vdc

1.2.2.4. Bench supply connected through modified battery housing

1.3. Measure the output voltage and current when applied to each load

1.3.1. Resistive load, 100 to 1000 ohms in 100 ohm steps (increase resistance until device reports open circuit condition)

1.3.2. AAMI load, with Rseries values of 100 to 1000 ohms in 100 ohm steps (1000 ohms is expected to trigger open circuit condition)

1.4. Measure the output frequency. Capture a clean waveform of 2 complete cycles, and a clean waveform of 20 complete cycles. Measure the period between cycles (on scope, show measurement values), as well as the pulse width. Save screen shots for all waveforms, insure that they are clearly labeled. The output waveforms and frequency data are to be collected for each load configuration, and each resistance value.

1.5. Conditions:

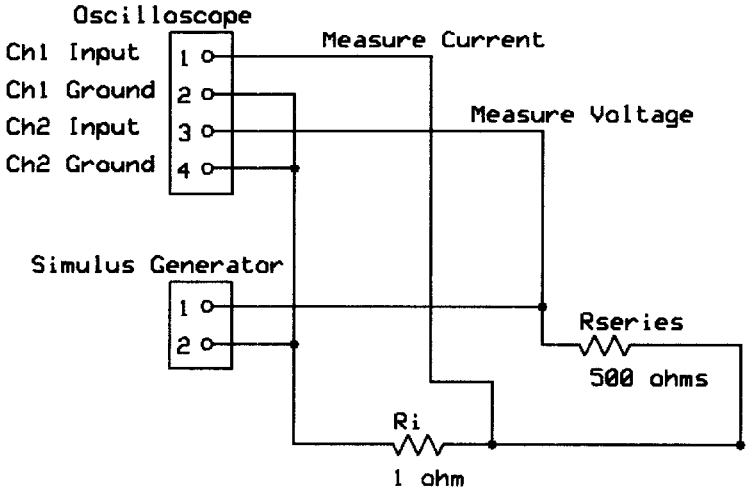
1.5.1. Room temperature and humidity, unless specified otherwise. This assumes a temperature range of 68 to 76 degrees F, but the actual temperature/humidity needs to be recorded during each test.

1.5.2. Insure that no Cell phones or other RF transmitters are operated within the vicinity of the device under test. See the SpinalPak II manual for a chart of separation distances based on frequency and output power.

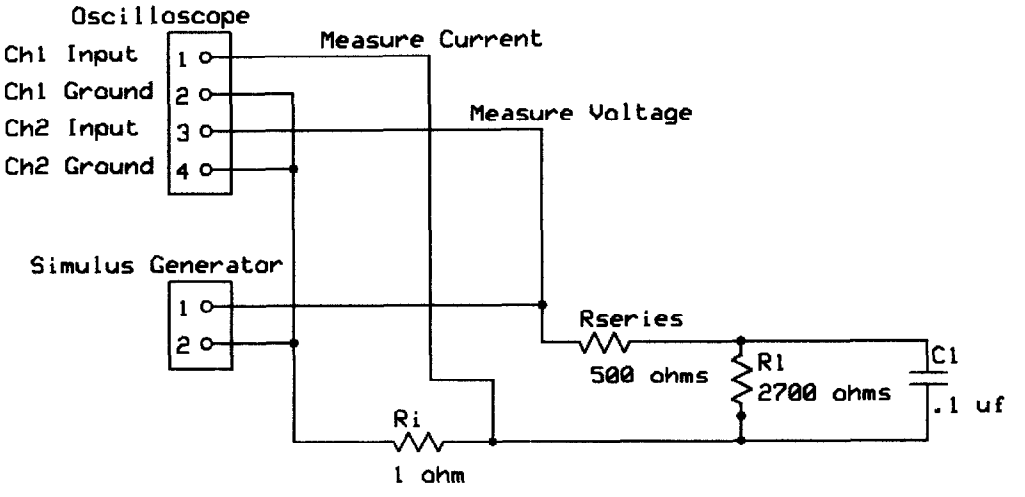
Actual Test Conditions: Original intent was to use a current probe for the current measurements, but he available current probe did not work properly at the current levels being measured. The alternative was to use the current sense resistor in the test load (see below), but there was a lot of noise present at the

voltage levels being produced. The solution was to place the device along with the test load inside the environmental chamber (double wall stainless steel box), where the noise levels were significantly lower. This also served to insure that no RF transmitters would cause interference during the tests. The current sense resistor was measured using the milli-ohm meter, and found to be 1.0064 ohms.

1.5.3. The Resistive load consists of a series resistor, and optionally a current sense resistor. The value of Rseries will be adjusted over the range of values specified in the data table.



1.5.4. The AAMI load consists of a prescribed resistance R in series with an RC network as shown. Rseries will be adjusted over the range of values specified in the data table.



1.6. Results:

1.6.1. Ri, the current sense resistor, was measured and found to be 1.0064 ohms. The current values shown in the collected data are simply the measured voltage interpreted as current with a ratio of 1.

1.6.2. The SpinalPak II devices do not operate above 700 ohms (they enter an open circuit mode where the output is intermittent). Data for these devices was not collected above 700 ohms.

1.6.3. The output measurements gave very similar results for the AAMI load when compared to the resistive load. The output frequency for the SP2 devices was slightly higher than the SP1 devices. The frequency graph on the following page shows the grouping of the frequency data. Results were similar for the Battery and the two bench power supply configurations. Only the Battery results are provided in the graph.

1.6.4. The output voltage drops off at load resistance values below 500 ohms. An interesting observation is that the devices adjust the output voltage (within a small range of load values) to maintain a constant voltage.

1.6.5. Waveform shape and description: All devices produced a true sine wave with a nominal Frequency of 60 KHz (see diagram below):

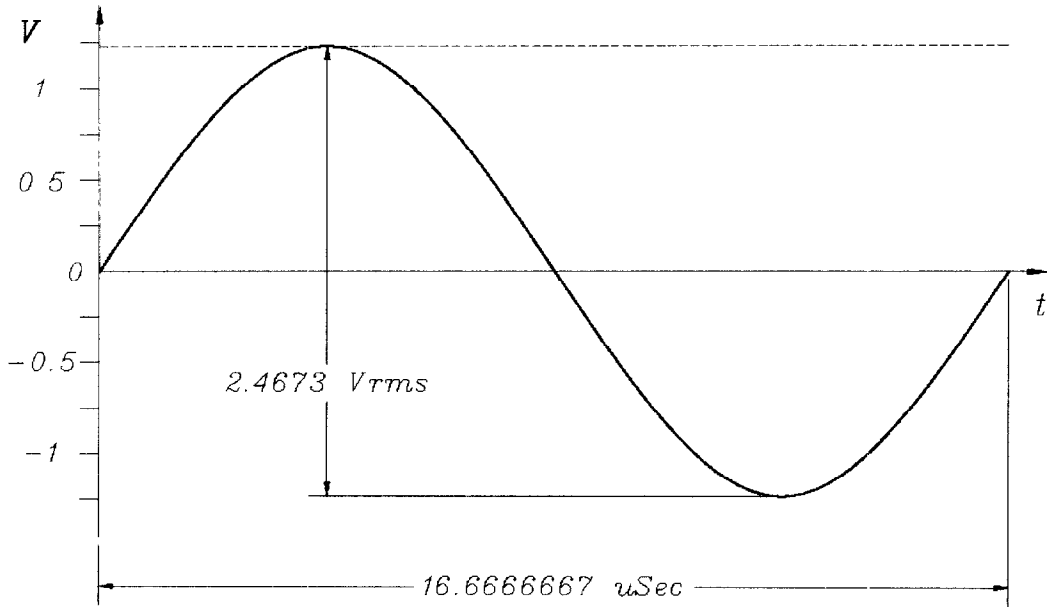
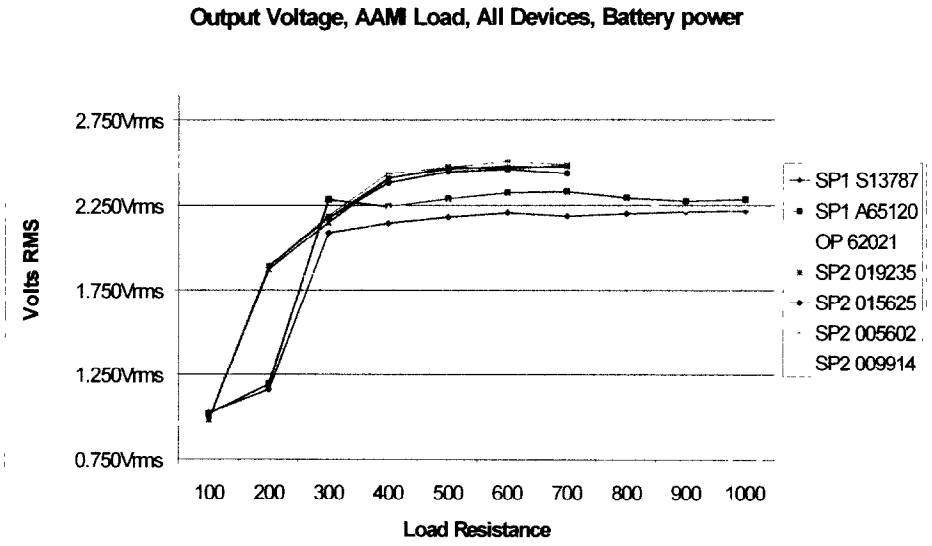
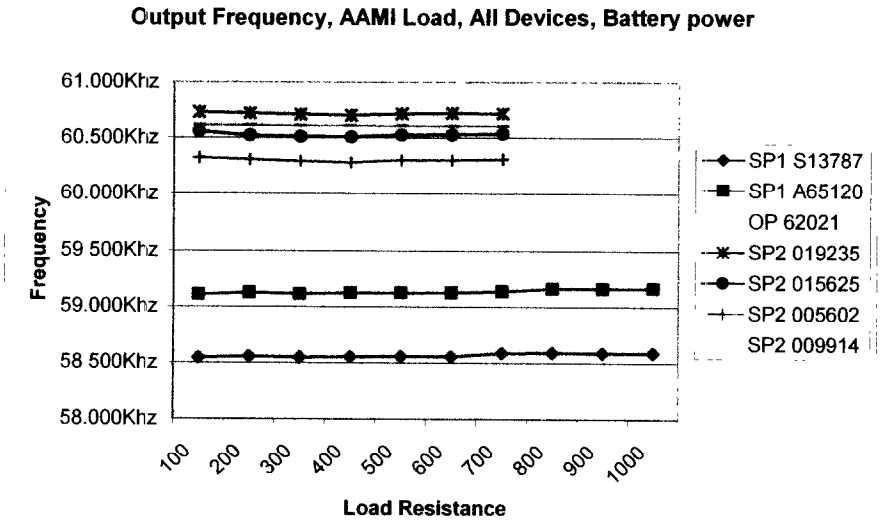


Table shows averaged min and max values from many data samples of 4 SpinalPak II devices. All measurements shown are from the test data with a 500 ohm AAMI load.

Parameter	Nominal	Maximum (Measured)	Minimum (Measured)
Frequency	60 KHz	60721 Hz	60299 Hz
Period (1/Frequency)	16.6666667 uSec	Not measured	Not Measured
Voltage (RMS)	2.4673 Vrms	2.4772	2.4487
Voltage (PK-PK), RMS*2*Sqrt(2)	6.97 Vpp (calculated)	Not measured	Not measured

1.7. Constant Voltage characteristic: The devices are designed to be constant voltage in the Physiologic and





Functional range (250 Ohms to 700 Ohms).

1.8. Unresolved Anomalies: None.

2. Test: **Spectrum analysis**

2.1. See separate test plan, "Spectrum Analysis_TestPlan.doc", as the spectrum analysis tests will be done at an EMC testing and certification laboratory. The data from these tests will be integrated into the test report.

2.2. Perform a spectrum analysis of the device output, using both the resistive load and the AAMI load, with Rseries values of 100 to 1000 ohms (increase resistance in 100 ohm steps until the device reports an open circuit condition). (Test loads will be supplied.)

2.2.1. Run spectrum analysis on the following frequency ranges

2.2.1.1. From "as low as the equipment supports" to 100MHz, to determine areas of interest

2.2.1.2. Fundamental frequency is 60KHz, we need to see details of the deviations from the center frequency, at least the range of 55kHz to 65 kHz.

2.2.1.3. There are anticipated harmonics at 960 kHz, we need to see this.

2.2.1.4. The switching power supply operates between 70KHz and 100 kHz, so this range needs to be examined.

2.2.1.5. Any areas of interest identified in the full spectrum sweep should be examined.

2.2.1.6. Images of each trace should be included in the report, identified by device serial number.

2.3. Conditions:

2.3.1. Normal room temperature and humidity, the actual temperature and humidity need to be recorded during each test.

2.3.2. Power supply configurations

2.3.2.1. Each device will be tested with its own battery as follows

2.3.2.1.1. SpinalPak II, Fully charged battery (allow to cool to room temp before using)

2.3.2.1.2. SpinalPak and OrthoPak, new 9v battery (supplied for each device)

2.4. Results

The spectrum analysis testing was done at an accredited EMC testing and certification laboratory. PDF files containing the spectrum graphs and data are referenced in Appendix A of this document. As testing was done with numerous load resistance values, and numerous devices, only representative sample graphs will be shown here, one each of the SpinalPak and the SpinalPak II devices.

The SpinalPak devices gave slightly different results that the SpinalPak II devices.

SpinalPak devices show a second order harmonic frequency (2 times the fundamental frequency), though the energy content of this harmonic is low (-28dB from the fundamental).

No other significant frequencies were observed.

The SpinalPak II devices

SpinalPak II devices did not show the second order harmonic, but there was evidence of the pulse width modulation (nominal frequency of 892 KHz) used by the class D power amplifier that is used in the circuit. This differs slightly from the SpinalPak, which uses a different output circuit. The energy of the PWM noise was typically –40 db from the fundamental frequency.

No other significant frequencies were observed.

In addition to the output signal analysis, a single SpinalPak II device was also scanned for radiated output energy. The radiated output was within the range expected.

CONDUCTED EMISSIONS - EVALUATION ONLY

AED 2005 9 12
EMI 2006 5 05

EUT:	Spinal Pak 1	Work Order:	CNTR0912
Serial Number:	S13797	Date:	09/14/05
		Temperature:	23
		Humidity:	38%
		Barometric Pressure:	28.11
Power:	Battery	Job Site:	EV04

TEST SPECIFICATIONS | **Test Method**

TEST PARAMETERS

Positive

COMMENTS

300 Ohm resistive load

EUT OPERATING MODES

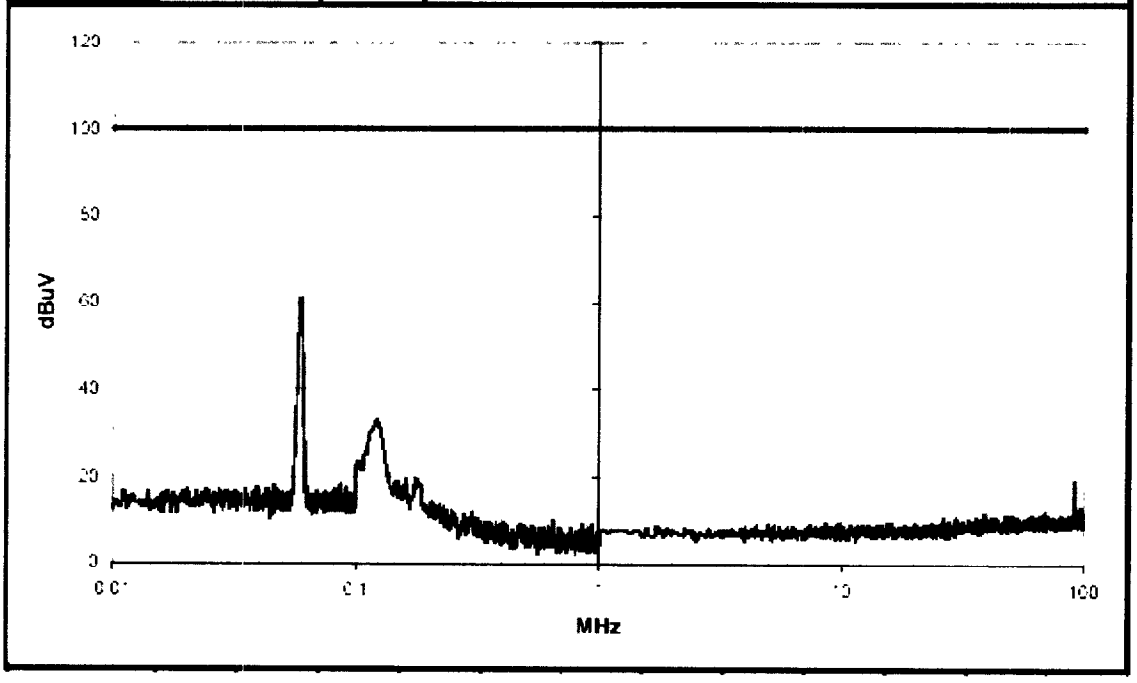
Normal operation

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	33
Configuration #	2
Results	Evaluation

Signature



CONDUCTED EMISSIONS - EVALUATION ONLY

EUT:	Spinal Pak 2	Work Order:	CNTR0012
Serial Number:	15625	Date:	08/14/06
		Temperature:	23
		Humidity:	38%
		Barometric Pressure	30.11
Power:	Battery	Job Site:	EV04

TEST SPECIFICATIONS — Test Method

TEST PARAMETERS

Positive

COMMENTS

100 Ohm Resistive load

EUT OPERATING MODES

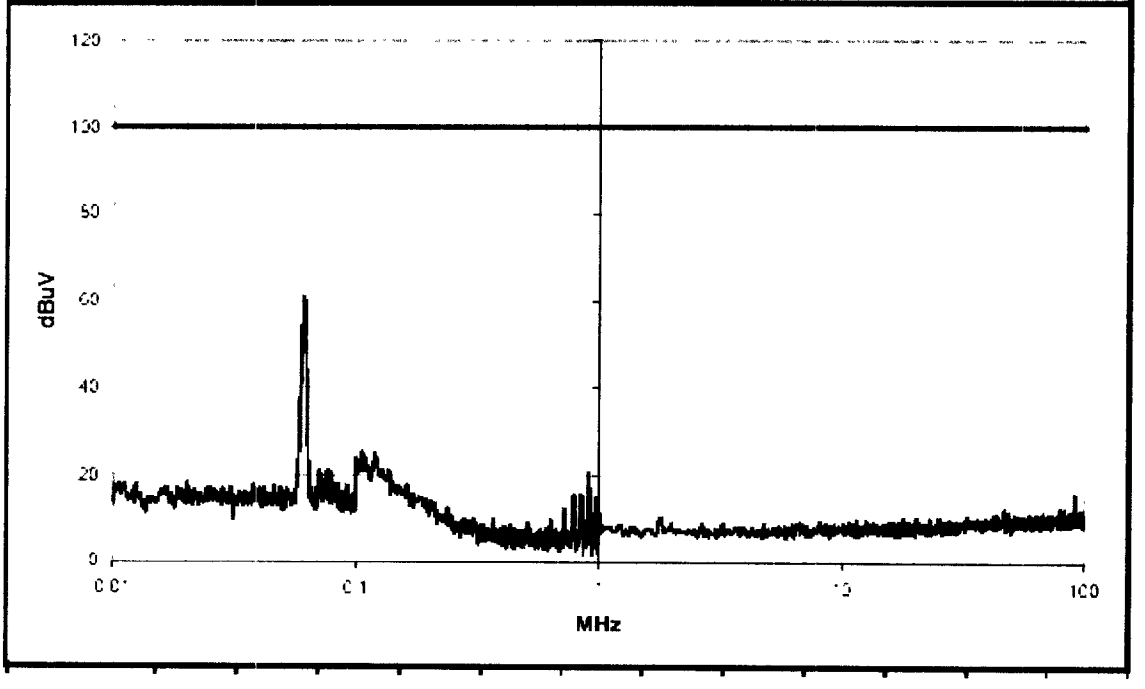
Normal operating mode.

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	94
Configuration #	6
Results	Evaluation

Signature



2.5. Unresolved Anomalies: None

3. Test: Vary the battery voltage

3.1. Connect the device to a bench power supply as follows:

3.1.1. Use the AAMI model load at 500 ohms

3.1.2. SpinalPak & OrthoPak

3.1.2.1. Setup the power supply for 9vdc, minimum 100 mA current limit

3.1.2.2. Use clip leads to connect to the 9v battery connector in the device.

3.1.2.3. Apply power, and measure the output voltage, current and frequency.

3.1.2.4. Measure and record the ambient temperature and humidity

3.1.3. Spinal Pak II

3.1.3.1. Use the "dummy" battery housing with external leads

3.1.3.2. Setup the bench supply for 1.5 vdc, minimum 100 mA current limit. This is the open circuit voltage measured on a freshly charged battery, and represents the worst case scenario for high input voltage.

3.1.3.3. Apply power, and measure the output voltage, current and frequency.

3.1.3.4. Measure and record the ambient temperature and humidity

3.2. Reduce the power supply voltage and recheck the output voltage, current, and frequency..

3.2.1. SP1 & OP, reduce voltage to 6 vdc (or until the device ceases operation)

3.2.1.1. Adjust the voltage slowly so the low voltage cutoff point can be observed. Record the trip point voltage.

3.2.1.2. Turn the power off, reset the voltage to 9 vdc, and then re-power the device.

3.2.1.3. Set the voltage to a value .05 volts above the trip point recorded in the previous step.

3.2.1.4. Measure and record the output voltage, current and frequency.

3.2.1.5. Measure and record the ambient temperature and humidity

3.2.2. SP2, reduce the voltage to 1.05 vdc.

3.2.2.1. Adjust the voltage slowly below 1.15 volts, and observe the point at which the device displays the low battery icon on the LCD display.

3.2.2.2. Record the low voltage trip point.

3.2.2.3. Turn the power off, reset the voltage to 1.5 vdc, and then re-power the device.

3.2.2.4. Set the voltage to a value .05 volts above the trip point recorded in the previous step.

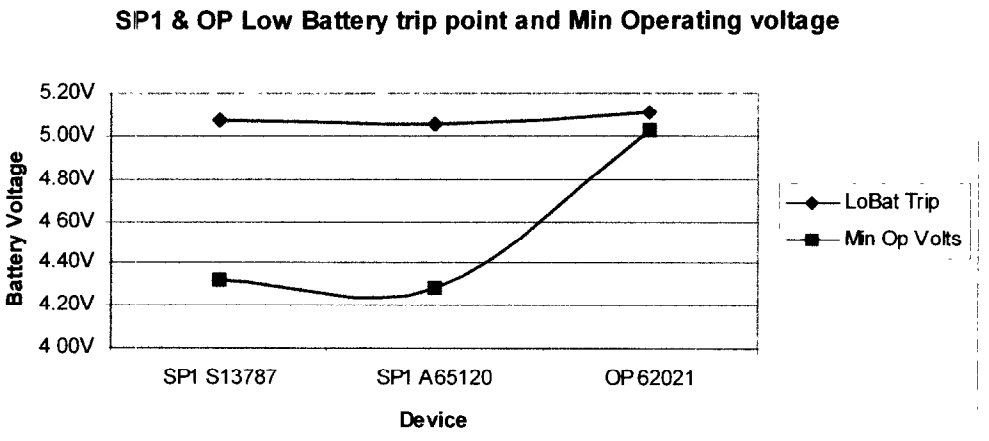
3.2.2.5. Measure and record the output voltage, current and frequency.

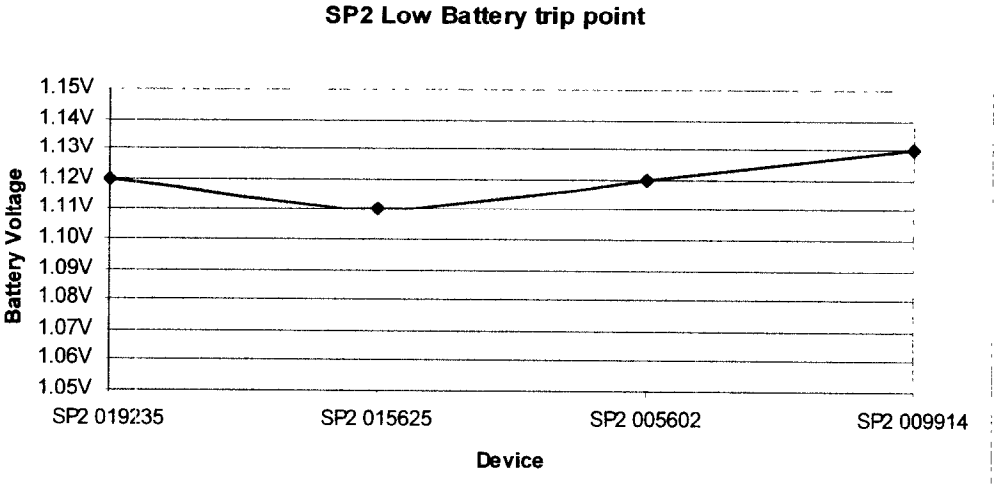
3.2.2.6. Measure and record the ambient temperature and humidity

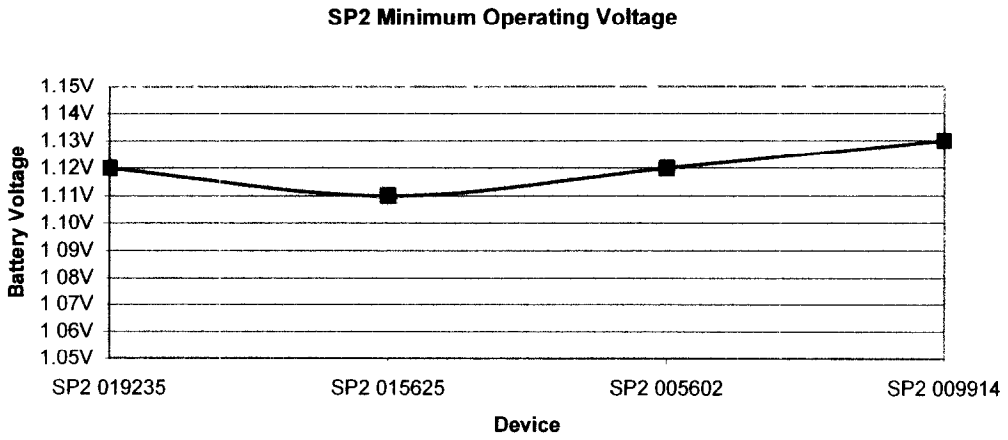
3.2.3. record the lowest voltage that still operates the device

3.3. Results

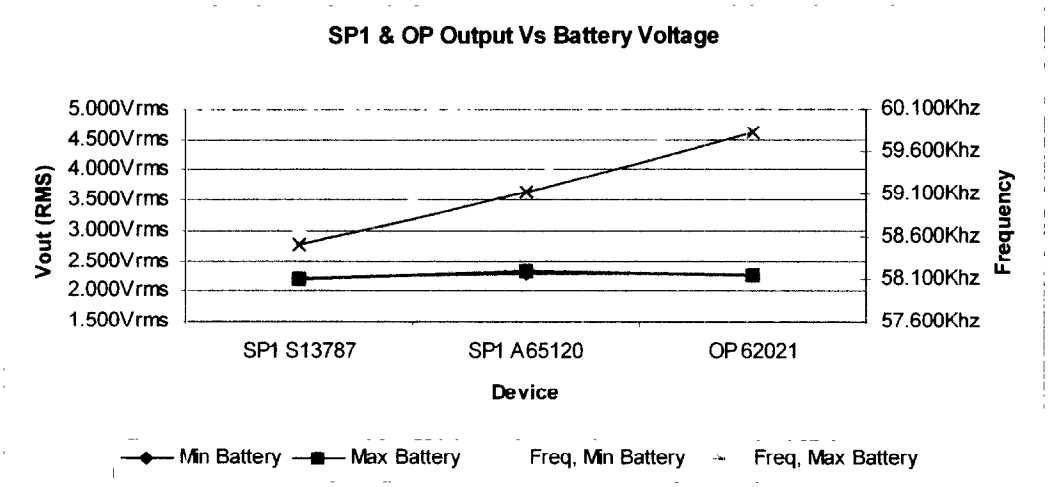
The low voltage trip points and the lowest voltage where the devices continue to operate are summarized in the following charts:





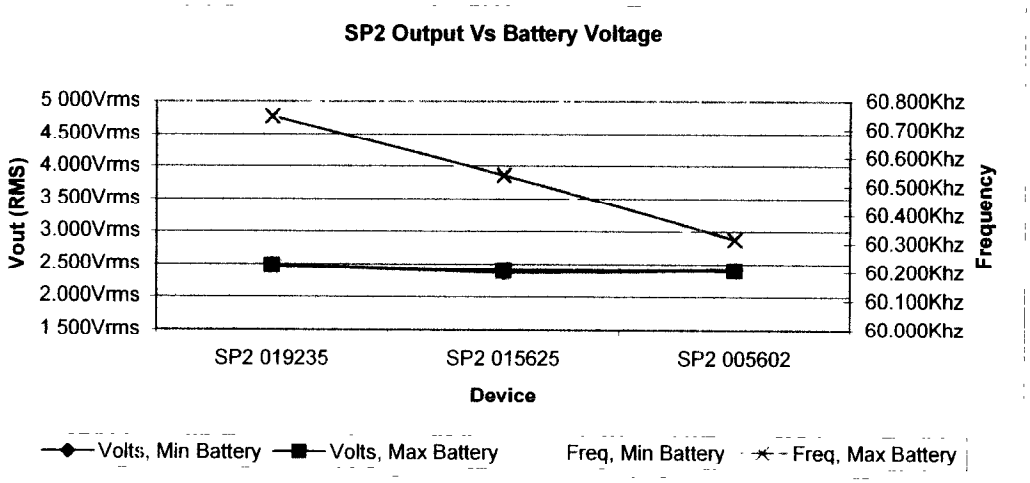

SP2 Minimum Operating Voltage
Battery Voltage
1.15V
1 14V
1.13V
1.12V
1.11V
1.10V
1 09V
1 08V
1 07V
1 06V
1.05V
SP2 019235
SP2 015625
SP2 005602
SP2 009914
Device

The output voltage and frequency variations over the range of battery voltage are shown in the following graphs.



3.4. Unresolved Anomalies: None.

4.



Test: Vary the ambient temperature

4.1. Using the environmental chamber, make the following measurements

4.1.1. Setup the chamber to operate at the temperatures listed. Place the device to be tested in the center of the chamber, and route cables out of the chamber to the test load (test load is located outside the chamber so that it is not affected by the temperature changes), so that the waveform measurements can be done without opening the chamber. Device to be powered from external supply located outside the chamber. See 3.1 above for power supply setup. Leave power off until chamber stabilized at specified temperatures.

4.1.1.1. 39 °F (± 2 °F), with Relative Humidity of 50% (± 5%)

4.1.1.2. 70 °F (± 2 °F), with Relative Humidity of 50% (± 5%)

4.1.1.3. 102 °F (± 2 °F), with Relative Humidity of 50% (± 5%)

4.1.2. Allow the chamber to stabilize for 30 minutes after reaching the specified temperature

4.1.2.1. Connect device output leads to the test load, select the AAMI model, and set Rseries to 500 ohms

4.1.2.2. Power up the device (see 3.1 above for details of external power supply configuration)

4.1.2.3. Start sampling the output waveform frequency and voltage at 30-second intervals (use automated scripts to control the oscilloscope).

4.1.2.4. Allow the device to operate for 5 minutes while the sampling continues. (We are limiting the total run time of the device to avoid "treatment end").

4.1.2.5. Turn off the device and setup the chamber for the next data point.

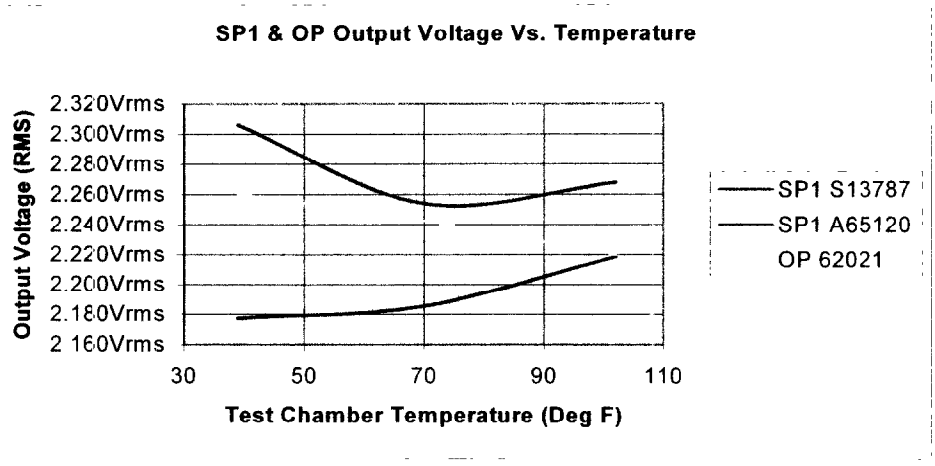
4.1.2.6. Screen shots need to be labeled, then saved, for each measurement.

4.2. Results: The following table contains the measured data points. Additionally, there is strip chart data (not included here) taken during the 5 minute stabilization period immediately preceding these measurements. Note that unit SP2 015625 was intermittent at 39 Deg F the first time it was operated there. A second run at 39 deg F with this unit showed no problems.

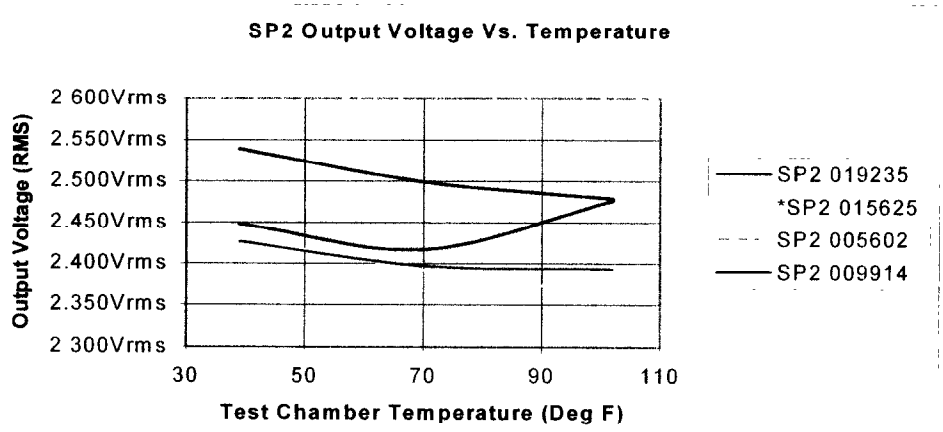
		Temp/Humidity Test (Using AAMI Load at 500 ohms)						
Device Serial#	Rseries	Setpoints	Vpp (RMS)	Ipp (RMS)	Frequency	Freq min	Freq max	Freq StdDev
SP1 S13787	500	39f, 50%	2.177Vrms	4.470E-3 Irms	58.555Khz	58.199Khz	58.962Khz	65.199hz
	500	70f, 50%	2.186Vrms	4.444E-3 Irms	58.500Khz	58.217Khz	58.840Khz	53.531hz
	500	102f, 50%	2.219Vrms	4.525E-3 Irms	58.537Khz	58.303Khz	58.807Khz	47.101hz
SP1 A65120	500	39f, 50%	2.306Vrms	4.769E-3 Irms	59.317Khz	58.411Khz	60.265Khz	117.979hz
	500	70f, 50%	2.254Vrms	4.596E-3 Irms	59.088Khz	58.711Khz	59.453Khz	61.204hz
	500	102f, 50%	2.268Vrms	4.636E-3 Irms	59.088Khz	58.718Khz	59.477Khz	58.912hz
OP 62021	500	39f, 50%	2.260Vrms	4.681E-3 Irms	60.035Khz	58.806Khz	61.256Khz	238.794hz
	500	70f, 50%	2.243Vrms	4.653E-3 Irms	59.972Khz	58.686Khz	61.128Khz	238.531hz
	500	102f, 50%	2.220Vrms	4.585E-3 Irms	59.851Khz	58.709Khz	60.857Khz	205.865hz

SP2 019235	500	39f, 50%	2.448Vrms	4.980E-3 Irms	60.656Khz	60.287Khz	61.162Khz	121.696hz
	500	70f, 50%	2.417Vrms	4.920E-3 Irms	60.710Khz	60.269Khz	61.314Khz	170.503hz
	500	102f, 50%	2.476Vrms	5.130E-3 Irms	60.773Khz	60.369Khz	61.213Khz	112.448hz
*SP2 015625	500	39f, 50%	2.432Vrms	4.950E-3 Irms	60.498Khz	60.045Khz	60.828Khz	75.775hz
	500	70f, 50%	2.392Vrms	4.864E-3 Irms	60.527Khz	60.132Khz	61.106Khz	82.134hz
	500	102f, 50%	2.363Vrms	4.796E-3 Irms	60.561Khz	60.172Khz	61.148Khz	140.876hz
SP2 005602	500	39f, 50%	2.426Vrms	4.973E-3 Irms	60.175Khz	59.558Khz	60.709Khz	182.710hz
	500	70f, 50%	2.397Vrms	4.932E-3 Irms	60.303Khz	59.697Khz	60.802Khz	147.373hz
	500	102f, 50%	2.393Vrms	4.873E-3 Irms	60.406Khz	59.833Khz	60.902Khz	106.504hz
SP2 009914	500	39f, 50%	2.539Vrms	5.223E-3 Irms	60.627Khz	60.267Khz	60.856Khz	56.549hz
	500	70f, 50%	2.499Vrms	5.128E-3 Irms	60.639Khz	60.366Khz	60.875Khz	54.871hz
	500	102f, 50%	2.479Vrms	5.078E-3 Irms	60.654Khz	60.361Khz	60.970Khz	62.799hz

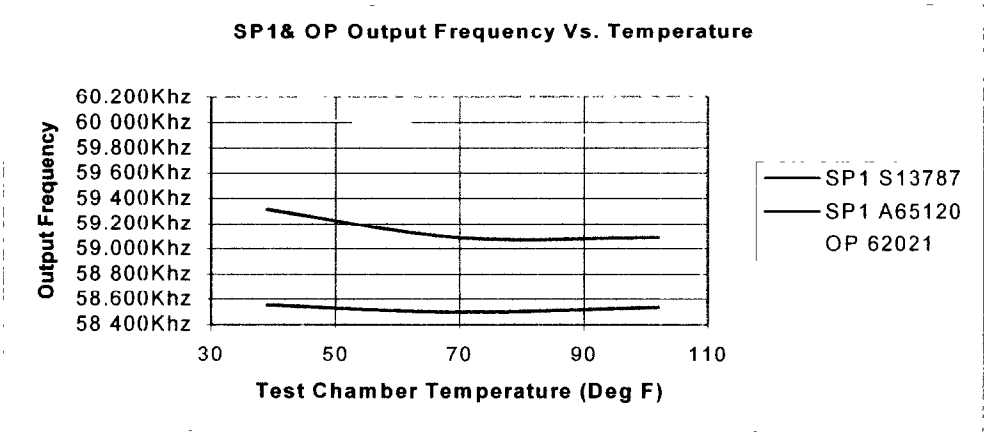
4.2.1. Data Graph: SP1 Output Voltage Vs. Temperature



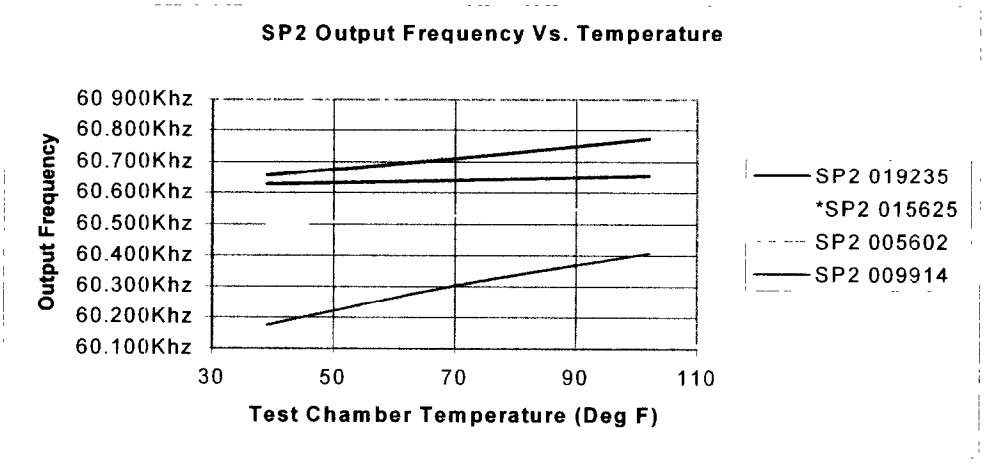
4.2.2. Data Graph: SP2 Output Voltage Vs. Temperature



4.2.3. Data Graph: SP1 Output Frequency Vs. Temperature



4.2.4. Data Graph: SP2 Output Frequency Vs. Temperature



4.3. Unresolved Anomalies: None

5. Test: LED Observations

5.1. Connect the device for normal operation on the test bench.

5.1.1.1. Connect device output leads to the test load, select the AAMI model, and set Rseries to 500 ohms

5.1.1.2. Connect appropriate battery to device

5.1.1.3. Observe the LED during the startup sequence and record the observed behavior

5.1.1.4. Verify the device output is the normal waveform, and note the state of the LED

5.1.1.5. Set the test load to "open circuit", observe and note the LED action

5.2. Results

Unit	LED Startup Sequence	Normal Mode	Open Circuit Mode
SP1 A65120	No Activity	Flashes green every 4 seconds	Flashes red every second for about 1/2 second
OP 62021	Flashed yellow for about 1/2 second	Flashes green every 4 seconds	Flashes red every second for about 1/2 second
SP1 S13787	No Activity	Flashes green every 4 seconds	Flashes red every second for about 1/2 second
SP2 019235	Flashes yellow for about 1/2 second, then turns off for about 6 seconds, then flashes yellow again	LED is off	Flashes yellow every second for about 1/2 second
SP2 005602	Flashes yellow for about 1/2 second, then turns off for about 6 seconds, then flashes yellow again	LED is off	Flashes yellow every second for about 1/2 second
SP2 015625	Flashes yellow for about 1/2 second, then turns off for about 6 seconds, then flashes yellow again	LED is off	Flashes yellow every second for about 1/2 second
SP2 009914	Flashes yellow for about 1/2 second, then turns off for about 6 seconds, then flashes yellow again	LED is off	Flashes yellow every second for about 1/2 second

5.3. Unresolved Anomalies: None

6. Test: Audible alarm Observations

6.1. Connect the device for normal operation on the test bench.

6.1.1.1. Connect device output leads to the test load, select the AAMI model, and set Rseries to 500 ohms

6.1.1.2. Connect appropriate battery to device

6.1.1.3. Verify the device is output is the normal waveform

6.1.1.4. Disconnect the lead from the test load, observe and note the audible alarm

6.1.1.4.1. Measure the sound level with an SPL meter (dba scale, peak level)

6.1.1.4.2. Note whether the sound is continuous or discontinuous. If discontinuous, measure the pulse rate and duration (stop watch, count 10 cycles)

6.2. Results

Unit	dba Level and range	Alarm activity
SP1 A65120	67.8dba, 40-70	beeped every half second
OP 62021	68.5dba, 40-70	beeped every half second
SP1 S13787	68.0dba, 40-70	beeped every half second
SP2 019235	68.0dba, 40-70	Beeped every second for about 1/2 a second
SP2 005602	67.0dba, 40-70	Beeped every second for about 1/2 a second
SP2 015625	68.5bda, 40-70	Beeped every second for about 1/2 a second
SP2 009914	67.5dba, 40-70	Beeped every second for about 1/2 a second

6.3. Unresolved Anomalies: None

7. Test: **Device operating temperature**

7.1. Connect the device for normal operation on the test bench.

7.1.1.1. Connect device output leads to the test load, select the AAMI model, and set Rseries to 500 ohms

7.1.1.2. Connect appropriate battery to device

7.1.1.3. Verify the device outputs the normal waveform, allow to operate for 30 minutes

7.1.1.4. Using an infrared temp probe, measure the temperature of the exterior of the device on all sides. Record the temperature of the Front, Back, Left, Right, Top, and Bottom sides. Record the ambient temperature using the same infrared probe, aiming the probe at the work surface on which the device is operating, at a distance of 12 inches from the device. Record the ambient humidity.

7.2. Results

7.2.1. Measured temperature values are shown in the table below. One device was not measured, as SP1 A65120 was removed from the test by RSMedical for other uses.

		Case Temperature Observations (Using AAMI Load at 500 ohms)						
Device Serial#	Rseries	Ambient temp/humidity	Front temp	Back temp	Left temp	Right temp	Top temp	Bottom temp
SP1 S13787	500	24.7C/37%	26.6C	26.7C	26.2C	25.8C	26.4C	26.3C
SP1 A65120	500	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OP 62021	500	22.1C/38%	24.1C	24.0C	23.7C	24.0C	23.9C	24.2C
SP2 019235	500	24.8C/35%	25.7C	26.4C	25.9C	26.2C	26.1C	26.0C
SP2 015625	500	24.6C/37%	25.3C	25.7C	25.6C	26.2C	25.8C	25.5C
SP2 005602	500	21.9C/38%	23.2C	23.6C	23.1C	23.6C	23.4C	23.4C
SP2 009914	500	23.7C/36%	24.9C	25.7C	25.4C	25.6C	25.6C	25.6

7.2.2. Not shown here is additional output voltage and frequency data collected while waiting for the temperature to stabilize (30 minutes). This data shows that the voltage and frequency are stable over the 30 minute period. See Appendix A for the data file references.

7.3. Unresolved Anomalies: None

References (Standards, Documents, etc.):

Reference Number:	Document/Standard Title:	Date:
NS4	American National Standard for Transcutaneous Electrical Nerve Stimulators	1985

Test Plan Authentication:

[redacted]	[redacted]	[redacted]	[redacted]
[redacted]		[redacted]	[redacted]
[redacted]		[redacted]	[redacted]

CONCLUSION:

This sequence of tests was designed to reveal operating characteristics of the Spinal Pak devices. The tests clearly show the differences between the two groups of devices (SpinalPak vs. SpinalPak 2). Output voltage regulation was observed, as well as the harmonic frequency in the SP1, and the PWM frequency in the SP2. Both devices produce a similar output signal, but obviously by different means.

Test Results/Conclusion Authentication:

[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]		[redacted]	

RS MEDICAL REVIEW:

Appendix A: Data File References

This appendix will describe each of the files in the associated zip file, what data they contain, and what portion of the test plan they belong to. These files are supplied in a zip file format, with directory structure included. The contents of the zip file should be extracted into an empty working folder, with the "Use Folder Names" option checked. The report (this file) will be in the root of this folder. Any of the files listed in this appendix will then be accessible by clicking on the file name below.

Note regarding current measurement: Current is measured as the voltage across a 1 ohm sense resistor, and is tabulated as pkpk(C2) and rms(C2). As the sense resistor is 1 ohm, the voltage values from the scope can be correctly read as current.

There are 7 sub-sections in the main test plan (basis of this report). Section 2 of the main test plan refers to a separate test plan (Spectrum Analysis_TestPlan.doc), as this testing was done in an anechoic (shielded from rf noise). The file references listed here are organized per the 7 sections of the main test plan.

Data files are named according using the template: "type_serial_section[_testType][_loadType][_loadDetail][_miscDescription]". Items in [] are optional, based on the context of the data. Data files are grouped into subfolders based on the test section, and further divided based on the test type within the section.

The files are organized into the following folders.

Testplans & Setup & EquipMisc

The test plans. Signed copies are on file in the project notebook.
- File (main test plan): SpinalPakOutputs_TestPlan_Revised.doc
- File (sub test plan for section 2): Spectrum Analysis_TestPlan.doc

Setup information for LeCroy oscilloscope
- LeCroyScopeSetupEN371_Output Measurement.lss

AAMI/Resistive load information
- AAMI Box Sense Resistor Data.txt
- AAMI_TestLoadBoxSchematic.pdf

Pictures of test setup
- ThermalChamber_Photo.JPG
- Outside ThermalChamber_LeCroyScope_Photo.JPG

Section 1 Output Voltage & Frequency

Sect1_Summary.xls

Sect1_Batt_AAMI_Summary.xls
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OP_62021_Sect1_Batt_AAMI_1000.jpg
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OP_62021_Sect1_Res_PSlow_Summary.xls
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SP1_A65120_Sect1_Res_PSlow_200.jpg
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SP2_015625_Sect1_Res_PSlow_Summary.xls

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Section 2 Spectrum Analysis

Section2_SpecAnal_Empty TestChmbr.pdf
Section2_SpecAnal_OP_62021_Data.pdf
Section2_SpecAnal_SP1_A65120_Data.pdf
Section2_SpecAnal_SP1_S13787_Data.pdf
Section2_SpecAnal_SP2_15625_Data.pdf
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Section3_VarBatVolt_SP2_009914_Summary.xls

Section 4 Varied Ambient Temperature

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Section4_VariedTemp_Oven strip chart 9-21-05.xls
Section4_VariedTemp_Oven strip chart 9-22-05.txt
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Section4_VariedTemp_Oven Strip Chart 9-23-05.txt
Section4_VariedTemp_Oven Strip Chart 9-23-05.xls
Section4_VariedTemp_Oven Strip Chart 9-26-05.txt
Section4_VariedTemp_Oven Strip Chart 9-26-05.xls

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Section4_VariedTemp_102f_SP1_A65120_1.jpg
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Sect4_VariedTemp_102f_SP1_S13787_1.jpg
Sect4_VariedTemp_102f_SP1_S13787_Smry.xls
Section4_VariedTemp_102f_SP2_005602_1.jpg
Sect4_VariedTemp_102f_SP2_005602_Smry.xls
Section4_VariedTemp_102f_SP2_015625_1.jpg
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Sect4_VariedTemp_102f_SP2_019235_Smry.xls

Section4_VariedTemp_102f_SP2_009914_1.jpg
Sect4_VariedTemp_102f_SP2_009914_Smry.xls

Section4_VariedTemp_39f_OP_62021_1.jpg
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Section4_VariedTemp_39f_SP1_S13787_1.jpg
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Section4_VariedTemp_39f_SP2_005602_1.jpg
Section4_VariedTemp_39f_SP2_005602_Smry.xls
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Sect4_VariedTemp_39f_SP2_009914_Smry.xls

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Sect4_VariedTemp_70f_SP1_A65120_Smry.xls
Section4_VariedTemp_70f_SP1_S13787_1.jpg
Sect4_VariedTemp_70f_SP1_S13787_Smry.xls
Section4_VariedTemp_70f_SP2_005602_1.jpg
Sect4_VariedTemp_70f_SP2_005602_Smry.xls
Section4_VariedTemp_70f_SP2_015625_1.jpg
Sect4_VariedTemp_70f_SP2_015625_Smry.xls
Section4_VariedTemp_70f_SP2_019235_1.jpg
Sect4_VariedTemp_70f_SP2_019235_Smry.xls
Section4_VariedTemp_70f_SP2_009914_1.jpg
Sect4_VariedTemp_70f_SP2_009914_Smry.xls

Section 5-6 LED & Audible Alarm

Sections_5-6_Alarm&LED_Observations.xls

Section 7 Device Operating Temperature

OP_62021Section7_StrpChrt_30MinRun_CaseTemp.xls
SP1_S13787Section7_StrpChrt_30MinRun_CaseTemp.xls
SP2_005602Section7_StrpChrt_30MinRun_CaseTemp.xls
SP2_009914Section7_StrpChrt_30MinRun_CaseTemp.xls
SP2_015625Section7_StrpChrt_30MinRun_CaseTemp.xls
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Test_7_DataSummary_CaseTemp.xls

Title:	Spinal Pak output characterization (EN371)	Document Number in Format: RSxx DMR ECO xx
Device:	SpinalPak, SpinalPak II	Revision: (Numeric when draft, Alpha on approval)
Accessory or Part *(If applicable)*	Model No. or Part No. *(If applicable)*	Effective: Date

PURPOSE/SCOPE: Perform a comparative analysis of the outputs of multiple Spinal Pak II devices, and at least one Spinal Pak I device. Spectrum analysis, voltage, current, frequency, and waveform shape are to be included. Scope pictures of all waveforms and spectrums need to be included in the test report. Both AAMI (NS4-1985) and resistive test loads will be used. All measurements will be taken at the connection point of the load circuit, external to the devices.

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DEFINITIONS/ABBREVIATIONS:

Define term(s) here as necessary (Bug = Unresolved Anomaly)

SP1 = Spinal Pak I device

SP2 = Spinal Pak II device

OP1 = Ortho Pak device

TEST OVERVIEW:

Preliminary: Perform the entire suite of tests on one device, then repeat for the next device, etc. The Spinal Pak 1 should be the first device tested. All setup information for each piece of test equipment is to be recorded at each point in the preliminary test sequence, so that each subsequent device is tested with exactly the same configurations.

When testing the Spinal Pak II devices, do not leave the devices powered any longer than needed, as they have an unknown number of hours remaining before they disable themselves.

All measurements of output voltage, current, and frequency should be done using the LeCroy oscilloscope, so that the automatic calculation capability can be utilized. Voltage and current measurements should be done with RMS values shown. Frequency measurements should include standard deviation, min, and max values.

Device Serial Numbers to be tested: Additional entries should be added when additional devices are supplied by RSMedical.

Mfgr./Model	Serial Number
Spinal Pak 1	S/N S13787
Spinal Pak 1	S/N A65120
OrthoPak	S/N 62021
Spinal Pak II	S/N 015625,
Spinal Pak II	S/N 019235
Spinal Pak II	S/N 005602

TEST EQUIPMENT USED: (add additional entries as needed)

Nomenclature	Mfgr./Model	SW Version	Serial Number	Calibration Due
Oscilloscope				
Spectrum Analyzer				
DMM				
Thermal chamber				

DETAILED TESTS:

1. Test: Waveform measurements
   1.1. Device output to be connected directly to the test load. No electrode pads as used for treatment will be in the circuit, as these items are being characterized separately.
   1.2. Power supply configurations
      1.2.1. Each device (SpinalPakII) will be tested with 3 different power supply configurations.

1.2.1.1. Fully charged battery (allow to cool to room temp before using)
1.2.1.2. Regulated bench power supply set to 1.40 Vdc
1.2.1.3. Regulated bench power supply set to 1.1 Vdc
1.2.1.4. Bench supply connected through modified battery housing

1.3. Measure the output voltage and current when applied to each load
1.3.1. Resistive load, 100 to 1000 ohms in 100 ohm steps (increase resistance until device reports open circuit condition)
1.3.2. AAMI load, with Rseries values of 100 to 1000 ohms in 100 ohm steps (1000 ohms is expected to trigger open circuit condition)

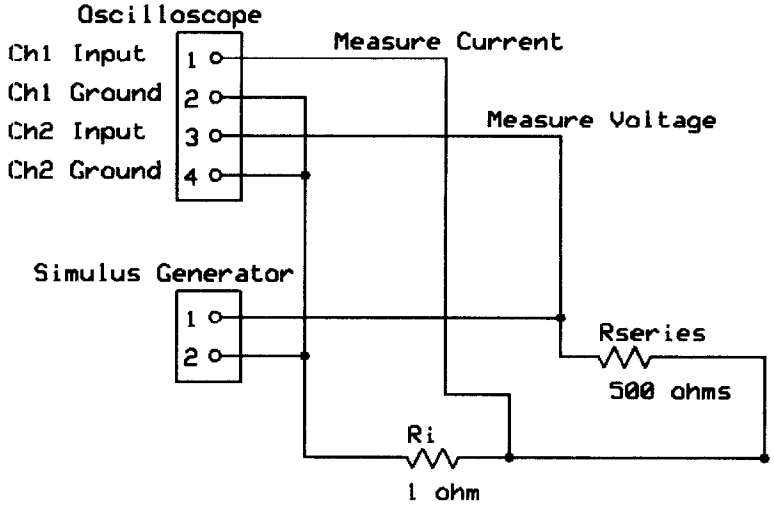
1.4. Measure the output frequency. Capture a clean waveform of 2 complete cycles, and a clean waveform of 20 complete cycles. Measure the period between cycles (on scope, show measurement values), as well as the pulse width. Save screen shots for all waveforms, insure that they are clearly labeled. The output waveforms and frequency data are to be collected for each load configuration, and each resistance value.

1.5. Conditions:

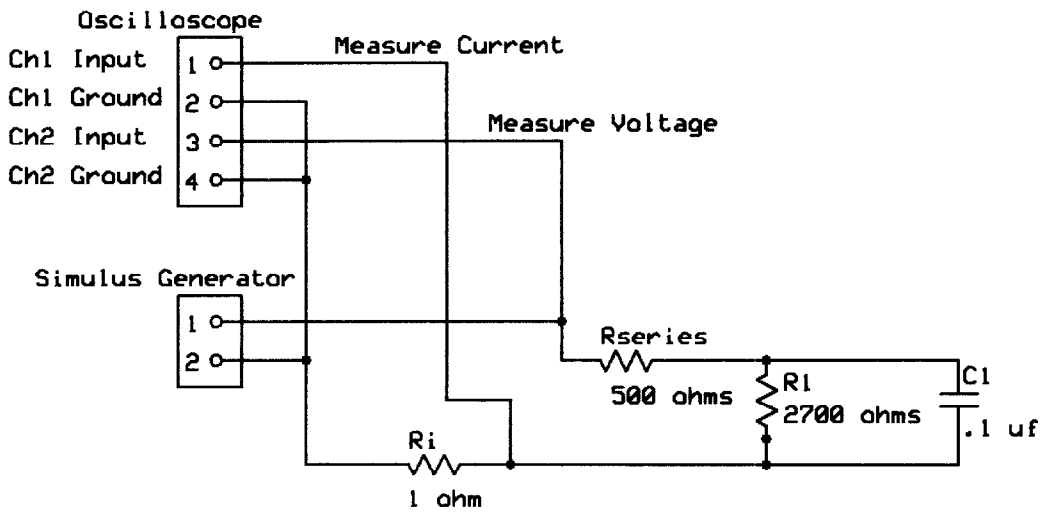
1.5.1. Room temperature and humidity, unless specified otherwise. This assumes a temperature range of 68 to 76 degrees F, but the actual temperature/humidity needs to be recorded during each test.

1.5.2. Insure that no Cell phones or other RF transmitters are operated within the vicinity of the device under test. See the SpinalPak II manual for a chart of separation distances based on frequency and output power.

1.5.3. The Resistive load consists of a series resistor, and optionally a current sense resistor. For this test a current probe will be used with the oscilloscope. The value of Rseries will be adjusted over the range of values specified in the data table.



1.5.4. The AAMI load consists of a prescribed resistance R in series with an RC network as shown. For this test a current probe will be used with the oscilloscope. The value of Rseries will be adjusted over the range of values specified in the data table.



1.6 Results: The results of these output waveform tests are not pass or fail, but rather a collection of scope screen shots, and the data summary table.

1.6.1

1.7. Unresolved Anomalies: None, or the description of the unexpected result or event, and its possible cause(s).

2. Test: Spectrum analysis

2.1. See separate test plan, "Spectrum Analysis_TestPlan.doc", as the spectrum analysis tests will be done at an EMC testing and certification laboratory. The data from these tests will be integrated into the test report.

3. Test: Vary the battery voltage

3.1. Connect the device to a bench power supply as follows:

3.1.1. Use the AAMI model load at 500 ohms

3.1.2. Spinal Pak 1

3.1.2.1. Setup the power supply for 9vdc, minimum 100 mA current limit

3.1.2.2. Use clip leads to connect to the 9v battery connector in the device.

3.1.2.3. Apply power, and measure the output voltage, current and frequency.

3.1.2.4. Measure and record the ambient temperature and humidity

3.1.3. Spinal Pak II

3.1.3.1. Use the "dummy" battery housing with external leads

3.1.3.2. Setup the bench supply for 1.5 vdc, minimum 100 mA current limit. This is the open circuit voltage measured on a freshly charged battery, and represents the worst case scenario for high input voltage.

3.1.3.3. Apply power, and measure the output voltage, current and frequency.

3.1.3.4. Measure and record the ambient temperature and humidity

3.2. Reduce the power supply voltage and recheck the output voltage, current, and frequency..

3.2.1. SP1, reduce voltage to 6 vdc (or until the device ceases operation)

3.2.1.1. Adjust the voltage slowly so the low voltage cutoff point can be observed. Record the trip point voltage.

3.2.1.2. Turn the power off, reset the voltage to 9 vdc, and then re-power the device.

3.2.1.3. Set the voltage to a value .05 volts above the trip point recorded in the previous step.

3.2.1.4. Measure and record the output voltage, current and frequency.

3.2.1.5. Measure and record the ambient temperature and humidity

3.2.2. SP2, reduce the voltage to 1.05 vdc.

3.2.2.1. Adjust the voltage slowly below 1.15 volts, and observe the point at which the device displays the low battery icon on the LCD display.

3.2.2.2. Record the low voltage trip point.

3.2.2.3. Turn the power off, reset the voltage to 1.5 vdc, and then re-power the device.

3.2.2.4. Set the voltage to a value .05 volts above the trip point recorded in the previous step.

3.2.2.5. Measure and record the output voltage, current and frequency.

3.2.2.6. Measure and record the ambient temperature and humidity

3.2.3. record the lowest voltage that still operates the device

3.3. Conditions:

3.4. Results

3.5. Unresolved Anomalies

4. Test: Vary the ambient temperature

4.1. Using the environmental chamber, make the following measurements

4.1.1.Setup the chamber to operate at the temperatures listed. Place the device to be tested in the center of the chamber, and route cables out of the chamber to the test load (test load is located outside the

chamber so that it is not affected by the temperature changes), so that the waveform measurements can be done without opening the chamber. Device to be powered from external supply located outside the chamber. See 3.1 above for power supply setup. Leave power off until chamber stabilized at specified temperatures.

4.1.1.1. 39 °F (± 2 °F), with Relative Humidity of 50% (± 5%)

4.1.1.2. 70 °F (± 2 °F), with Relative Humidity of 50% (± 5%)

4.1.1.3. 102 °F (± 2 °F), with Relative Humidity of 50% (± 5%)

4.1.2. Allow the chamber to stabilize for 30 minutes after reaching the specified temperature

4.1.2.1. Connect device output leads to the test load, select the AAMI model, and set Rseries to 500 ohms

4.1.2.2. Power up the device (see 3.1 above for details of external power supply configuration)

4.1.2.3. Start sampling the output waveform frequency and voltage at 30-second intervals (use automated scripts to control the oscilloscope).

4.1.2.4. Allow the device to operate for 5 minutes while the sampling continues. (We are limiting the total run time of the device to avoid "treatment end").

4.1.2.5. Turn off the device and setup the chamber for the next data point.

4.1.2.6. Screen shots need to be labeled, then saved, for each measurement.

4.2. Conditions:

4.3. Results

4.4. Unresolved Anomalies

5. Test: LED Observations

5.1. Connect the device for normal operation on the test bench.

5.1.1.1. Connect device output leads to the test load, select the AAMI model, and set Rseries to 500 ohms

5.1.1.2. Connect appropriate battery to device

5.1.1.3. Observe the LED during the startup sequence and record the observed behavior

5.1.1.4. Verify the device output is the normal waveform, and note the state of the LED

5.1.1.5. Set the test load to "open circuit", observe and note the LED action

5.2. Conditions:

5.3. Results

5.4. Unresolved Anomalies

6. Test: Audible alarm Observations
   6.1. Connect the device for normal operation on the test bench.
      6.1.1.1. Connect device output leads to the test load, select the AAMI model, and set Rseries to 500 ohms
      6.1.1.2. Connect appropriate battery to device
      6.1.1.3. Verify the device is output is the normal waveform
      6.1.1.4. Disconnect the lead from the test load, observe and note the audible alarm
         6.1.1.4.1. Measure the sound level with an SPL meter (dba scale, peak level)
         6.1.1.4.2. Note whether the sound is continuous or discontinuous. If discontinuous, measure the pulse rate and duration (stop watch, count 10 cycles)
   6.2. Conditions:
   6.3. Results
   6.4. Unresolved Anomalies

7. Test: Device operating temperature
   7.1. Connect the device for normal operation on the test bench.
      7.1.1.1. Connect device output leads to the test load, select the AAMI model, and set Rseries to 500 ohms
      7.1.1.2. Connect appropriate battery to device
      7.1.1.3. Verify the device is output is the normal waveform, allow to operate for 30 minutes
      7.1.1.4. Using an infrared temp probe, measure the temperature of the exterior of the device on all sides. Record the temperature of the Front, Back, Left, Right, Top, and Bottom sides. Record the ambient temperature using the same infrared probe, aiming the probe at the work surface on which the device is operating, at a distance of 12 inches from the device. Record the ambient humidity.
   7.2. Conditions:
   7.3. Results
   7.4. Unresolved Anomalies

References (Standards, Documents, etc.):

Reference Number:	Document/Standard Title:	Date:

Title:	Spinal Pak output characterization (EN371)	Document Number in Format: RSxx DMR ECO xx
Device:	SpinalPak, SpinalPak II	Revision: (Numeric when draft, Alpha on approval)
Accessory or Part *(If applicable)*	Model No. or Part No. *(If applicable)*	Effective: Date

NS4	American National Standard for Transcutaneous Electrical Nerve Stimulators	1985

Test Plan Authentication:

Developed by	Date Developed	Reviewed by	RS Medical Chief Engineer
Signature of Developer		Signature of Reviewer	Signature
Affiliation		Affiliation	

CONCLUSION:

The conclusions of the tester. Do the item(s) tested conform to requirements, specifications, and/or standards?

Test Results/Conclusion Authentication:

Tested by	Date of Tests	Reviewed by	RS Medical Chief Engineer
Signature of Tester		Signature of Reviewer	Signature
Affiliation		Affiliation	

RS MEDICAL REVIEW:

RS Medical review of the results and unresolved anomalies.

Title:	Spinal Pak output spectral characterization	Document Number in Format: RSxx DMR ECO xx
Device:	SpinalPak, SpinalPak II	Revision: (Numeric when draft, Alpha on approval)
Accessory or Part *(If applicable)*	Model No. or Part No. *(If applicable)*	Effective: Date

PURPOSE/SCOPE: Perform a Spectrum analysis of the output signal waveform. Scope pictures of all spectrums need to be included in the test report. Both AAMI and resistive test loads will be used. All measurements will be taken at the connection point of the load circuit, external to the devices.

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DEFINITIONS/ABBREVIATIONS: 1
TEST OVERVIEW: 1
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DEFINITIONS/ABBREVIATIONS:

Define term(s) here as necessary (Bug = Unresolved Anomaly)

SP1 - Spinal Pak I device

SP2 - Spinal Pak II device

TEST OVERVIEW:

Preliminary: When testing the Spinal Pak II devices, do not leave the devices powered any longer than needed, as they have an unknown number of hours remaining before they disable themselves.

Spectrum analysis tests will be done in an anechoic chamber. Preliminary tests were done at Controltek, but the background RF is significant enough to hide any possible noise emitted from the device.

All test equipment used must be documented, with calibration certification included in the test report.

Device Serial Numbers to be tested: Additional entries should be added when additional devices are supplied by RSMedical.

Mfgr./Model	Serial Number
Spinal Pak 1	S/N S13787
Spinal Pak 1	S/N A65120

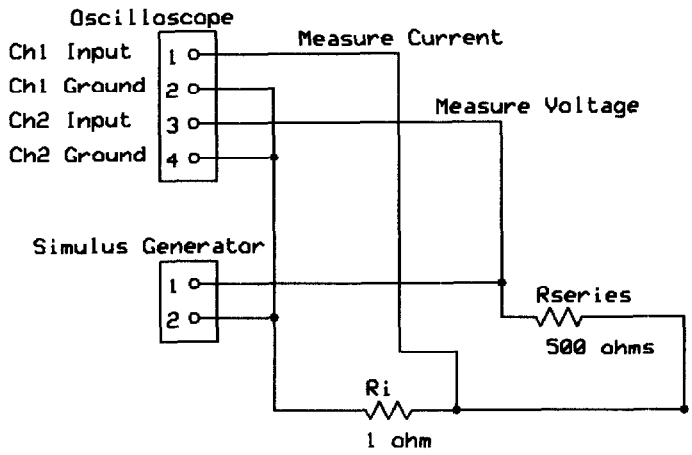
OrthoPak	S/N 62021
Spinal Pak II	S/N 015625,
Spinal Pak II	S/N 019235
Spinal Pak II	S/N 005602

TEST EQUIPMENT USED:

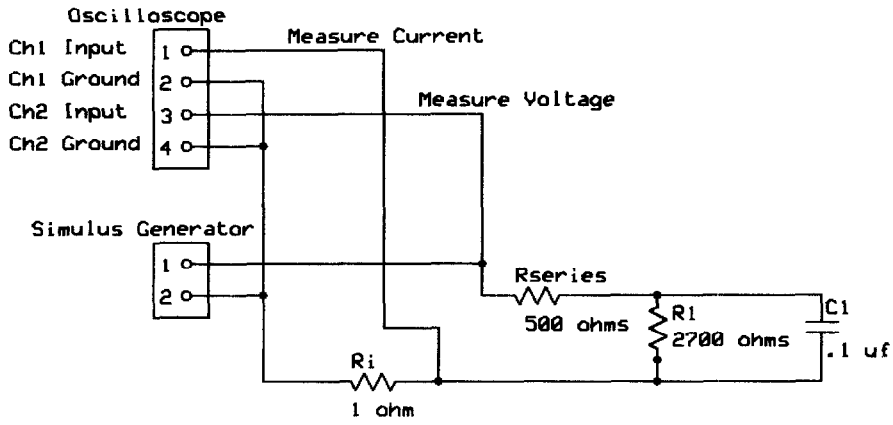
Nomenclature	Mfgr./Model	SW Version	Serial Number	Calibration Due
Oscilloscope				
Spectrum Analyzer				
DMM				

Test Loads

1. The Resistive load consists of a series resistor, and optionally a current sense resistor. The value of Rseries will be adjusted over the range of values specified in the data table.



The AAMI load consists of a prescribed resistance R in series with an RC network as shown. The valuc of Rseries will be adjusted over the range of values specified in the data table.



DETAILED TESTS:

1. Test: Spectrum analysis

1.1. Perform a spectrum analysis of the device output, using both the resistive load and the AAMI load, with Rseries values of 100 to 1000 ohms (increase resistance in 100 ohm steps until the device reports an open circuit condition). (Test loads will be supplied by Controltek)

1.1.1. Run spectrum analysis on the following frequency ranges

1.1.1.1. From "as low as the equipment supports" to 100MHz, to determine areas of interest

1.1.1.2. Fundamental frequency is 60KHz, we need to see details of the deviations from the center frequency, at least the range of 55kHz to 65 kHz.

1.1.1.3. There are anticipated harmonics at 960 kHz, we need to see this.

1.1.1.4. The switching power supply operates between 70KHz and 100 kHz, so this range needs to be examined.

1.1.1.5. Any areas of interest identified in the full spectrum sweep should be examined.

1.1.1.6. Images of each trace should be included in the report, identified by device serial number.

1.2. Conditions:

1.2.1. Normal room temperature and humidity, the actual temperature and humidity need to be recorded during each test.

1.2.2. Power supply configurations

1.2.2.1. Each device will be tested with its own battery as follows

1.2.2.1.1. Spinal Pak II, Fully charged battery (allow to cool to room temp before using)

1.2.2.1.2. Spinal Pak 1 and OrthoPak, new 9v battery (supplied for each device)

1.3. Results

1.4. Unresolved Anomalies

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References (Standards, Documents, etc.):

Reference Number:	Document/Standard Title:	Date:

Test Plan Authentication:

Developed by	Date Developed	Reviewed by	RS Medical Chief Engineer
Signature of Developer		Signature of Reviewer	Signature
Affiliation		Affiliation	

CONCLUSION:

The conclusions of the tester. Do the item(s) tested conform to requirements, specifications, and/or standards?

Test Results/Conclusion Authentication:

Tested by	Date of Tests	Reviewed by	RS Medical Chief Engineer
Signature of Tester		Signature of Reviewer	Signature
Affiliation		Affiliation	

RS MEDICAL REVIEW:

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PURPOSE/SCOPE: Perform a Spectrum analysis of the output signal waveform. Scope pictures of all spectrums need to be included in the test report. Both AAMI and resistive test loads will be used. All measurements will be taken at the connection point of the load circuit, external to the devices.

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TEST OVERVIEW:

Preliminary: When testing the Spinal Pak II devices, do not leave the devices powered any longer than needed, as they have an unknown number of hours remaining before they disable themselves.

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All test equipment used must be documented, with calibration certification included in the test report.

Device Serial Numbers to be tested: Additional entries should be added when additional devices are supplied by RSMedical.

Mfgr./Model	Serial Number
Spinal Pak 1	S/N S13787
Spinal Pak 1	S/N A65120

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OrthoPak	S/N 62021
Spinal Pak II	S/N 015625,
Spinal Pak II	S/N 019235
Spinal Pak II	S/N 005602

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Nomenclature	Mfgr./Model	SW Version	Serial Number	Calibration Due
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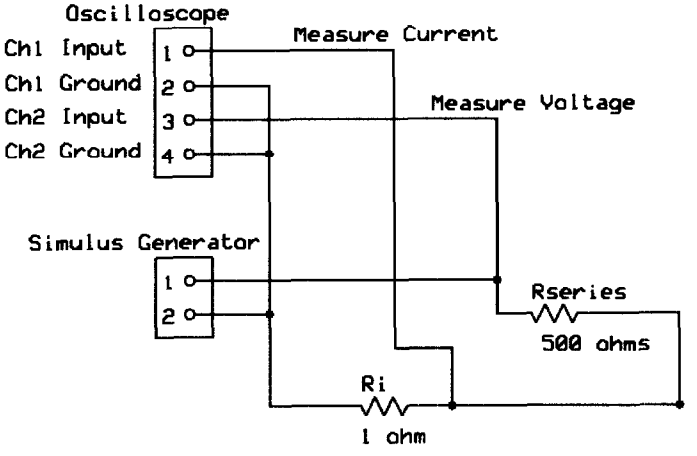
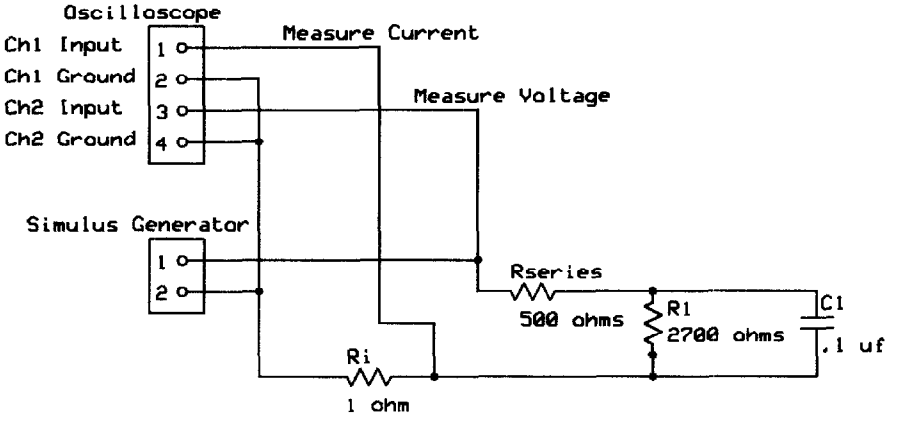
Spectrum Analyzer				
DMM				

Test Loads

1. The Resistive load consists of a series resistor, and optionally a current sense resistor. The value of Rseries will be adjusted over the range of values specified in the data table.



The AAMI load consists of a prescribed resistance R in series with an RC network as shown. The value of Rseries will be adjusted over the range of values specified in the data table.



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   1.1. Perform a spectrum analysis of the device output, using both the resistive load and the AAMI load, with Rseries values of 100 to 1000 ohms (increase resistance in 100 ohm steps until the device reports an open circuit condition). (Test loads will be supplied by Controltek)
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   1.2.2.1.1. Spinal Pak II, Fully charged battery (allow to cool to room temp before using)
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CONCLUSION:

The conclusions of the tester. Do the item(s) tested conform to requirements, specifications, and/or standards?

Test Results/Conclusion Authentication:

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Signature of Tester		Signature of Reviewer	Signature
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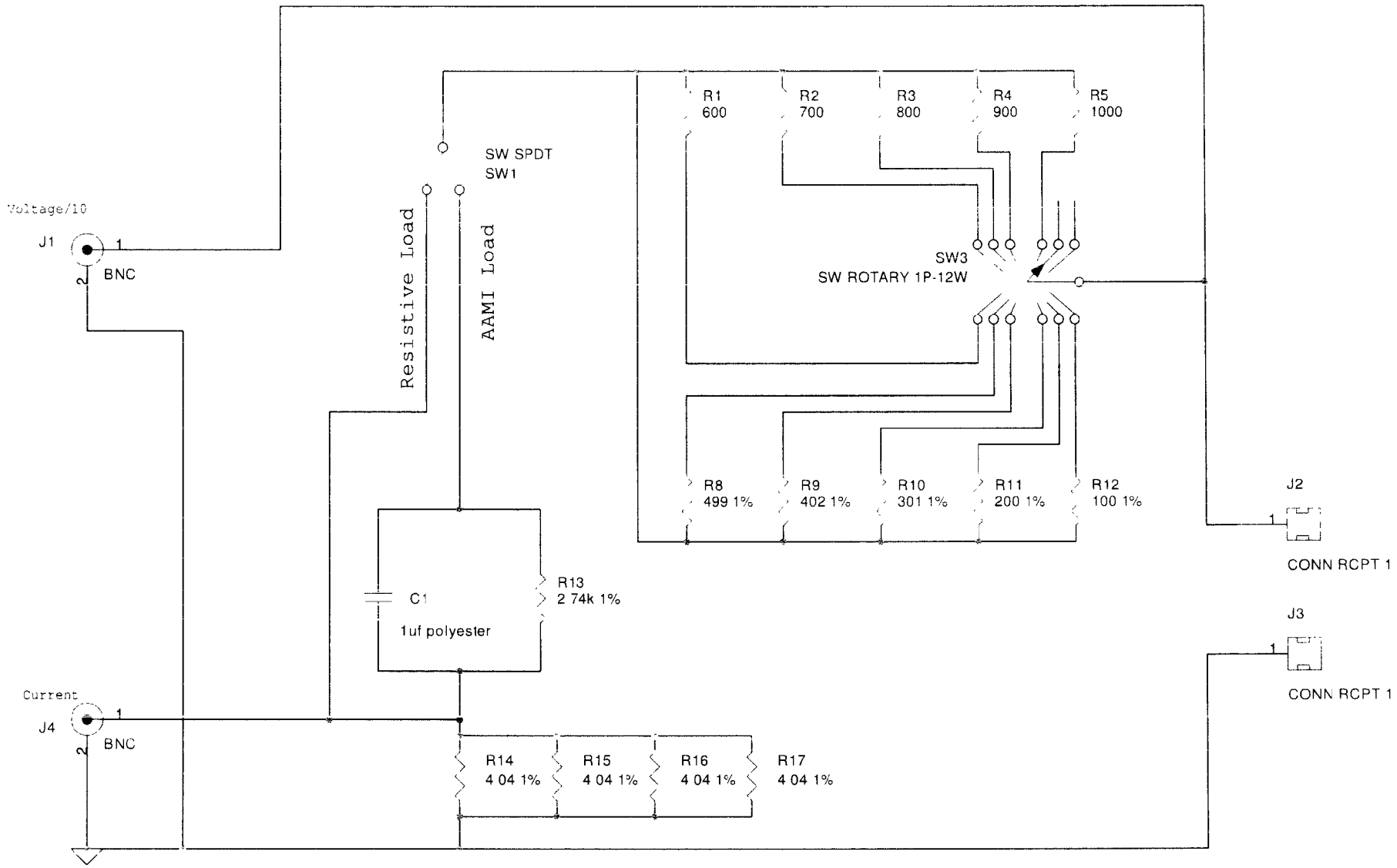
RS MEDICAL REVIEW:

RS Medical review of the results and unresolved anomalies.



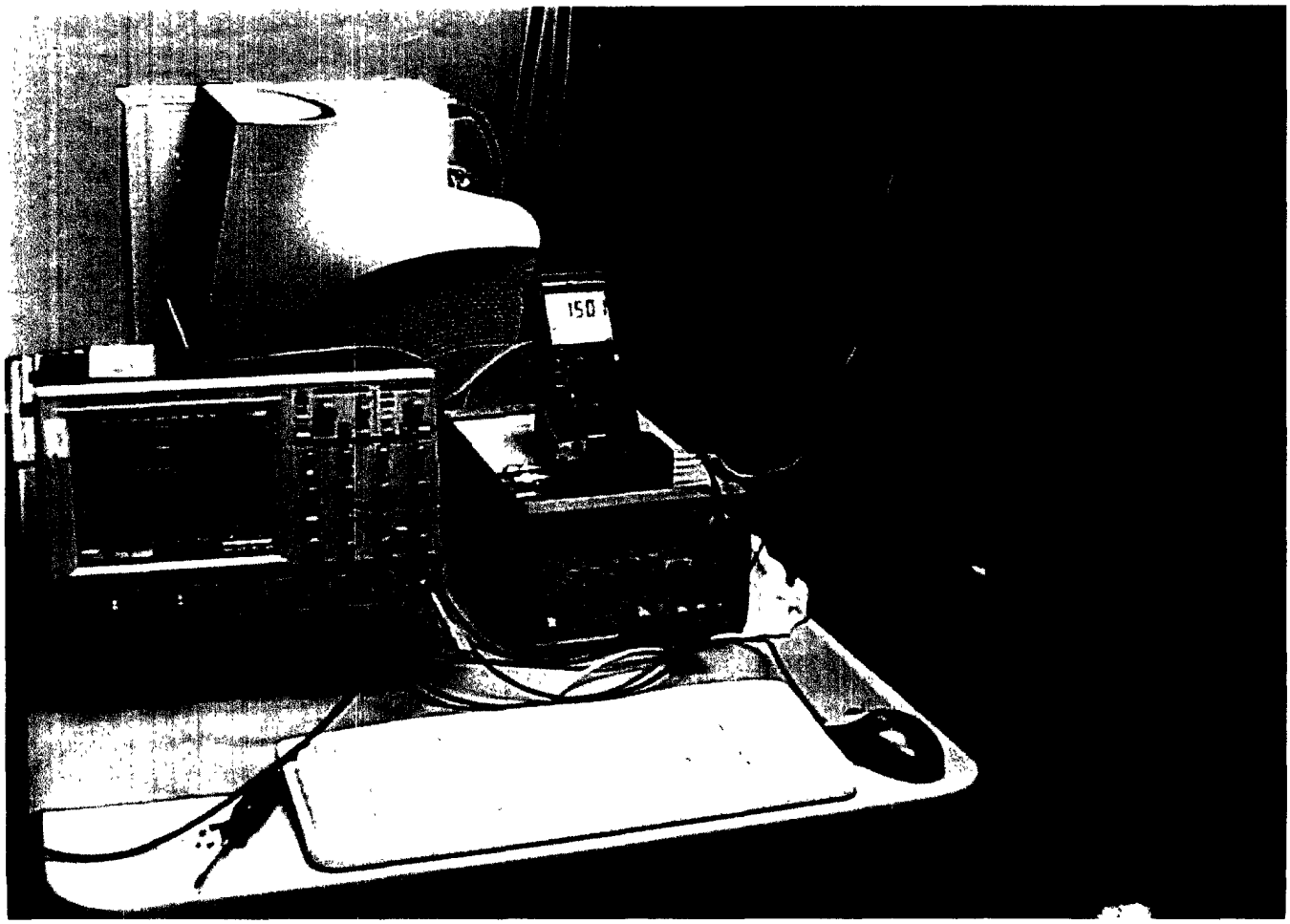
Title	Test Load, resitive and AAMI models, 1 1 voltage output	
Size A	Document Number <Doc>	Rev 1
Date. Thursday, October 27, 2005	Sheet 1 of 1	

0190

Sense Resistor Value
1.0064 ohms

GW Instek DC Milli-Ohm Meter
Model # GOM-802
SN # CD151041
Cal Due Date: 05/06/2006

Device under test
goes here


150

Date

Device/Serial#	Rseries	Resitive load tests..... Ambient Temp/humidity	Vpp (RMS)	Ipp (RMS)	Frequency	Freq min	Freq max	Freq StdDev	AAMI Load Tests..... Ambient Temp	Vpp (RMS)	Ipp (RMS)	Frequency	Freq min	Freq max	Freq StdDev
SP1 S13787	100	24 1C/ 41%	0 989Vrms	9 627E-3 Irms	58 549Khz	57 637Khz	59 613Khz	209 103hz	24 2C/ 41%	1 029Vrms	9 587E-3 Irms	58 542Khz	57 534Khz	59 506Khz	231 202hz
	200	24 1C/ 41%	1 132Vrms	5 641E-3 Irms	58 559Khz	57 670Khz	59 399Khz	175 651hz	24 2C/ 41%	1 163Vrms	5 733E-3 Irms	58 555Khz	57 887Khz	59 224Khz	172 517hz
	300	24 1C/ 41%	2 085Vrms	6 944E-3 Irms	58 551Khz	58 156Khz	58 940Khz	92 908hz	24 2C/ 41%	2 092Vrms	6 930E-3 Irms	58 548Khz	58 341Khz	58 770Khz	49 230hz
	400	24 1C/ 41%	2 145Vrms	5 370E-3 Irms	58 549Khz	58 237Khz	58 819Khz	71 708hz	24 2C/ 41%	2 148Vrms	5 372E-3 Irms	58 552Khz	58 330Khz	58 796Khz	53 703hz
	500	24 1C/ 41%	2 178Vrms	4 405E-3 Irms	58 550Khz	58 296Khz	58 850Khz	65 534hz	24 2C/ 41%	2 182Vrms	4 423E-3 Irms	58 554Khz	58 311Khz	58 767Khz	58 723hz
	600	24 1C/ 41%	2 203Vrms	3 669E-3 Irms	58 552Khz	58 317Khz	58 872Khz	64 518hz	24 2C/ 41%	2 208Vrms	3 693E-3 Irms	58 555Khz	58 238Khz	58 882Khz	62 775hz
	700	24 1C/ 41%	2 186Vrms	3 187E-3 Irms	58 583Khz	58 309Khz	58 919Khz	73 506hz	24 2C/ 41%	2 190Vrms	3 205E-3 Irms	58 587Khz	58 129Khz	58 901Khz	71 917hz
	800	24 1C/ 41%	2 200Vrms	2 812E-3 Irms	58 583Khz	58 284Khz	58 864Khz	72 364hz	24 2C/ 41%	2 203Vrms	2 840E-3 Irms	58 590Khz	58 133Khz	58 853Khz	72 821hz
	900	24 1C/ 41%	2 211Vrms	2 525E-3 Irms	58 584Khz	58 325Khz	58 894Khz	71 556hz	24 2C/ 41%	2 214Vrms	2 562E-3 Irms	58 589Khz	58 309Khz	58 857Khz	72 140hz
	1000	24.1C/ 41%	2.220Vrms	2 328E-3 Irms	58 585Khz	58.285Khz	58.915Khz	71.567hz	24 2C/ 41%	2 220Vrms	2.363E-3 Irms	58.588Khz	58.320Khz	58 903Khz	71 724hz
SP1 A65120	100	22 0C/ 33%	1 000Vrms	9 701E-3 Irms	59 127Khz	58 177Khz	59 898Khz	194 653hz	21 9C/ 34%	1 023Vrms	9 499E-3 Irms	59 108Khz	58 140Khz	60 187Khz	228 470hz
	200	22 0C/ 33%	1 185Vrms	5 919E-3 Irms	59 142Khz	58 224Khz	59 970Khz	169 715hz	21 9C/ 34%	1 192Vrms	5 873E-3 Irms	59 125Khz	58 282Khz	59 961Khz	178 640hz
	300	22 0C/ 33%	2 277Vrms	7 574E-3 Irms	59 128Khz	58 884Khz	59.381Khz	69 114hz	21.9C/ 34%	2 285Vrms	7 556E-3 Irms	59 114Khz	58 937Khz	59 309Khz	45 126hz
	400	22 0C/ 33%	2 240Vrms	5 624E-3 Irms	59 134Khz	58 918Khz	59 367Khz	57 428hz	21 9C/ 34%	2 245Vrms	5 616E-3 Irms	59 123Khz	58 951Khz	59 306Khz	46 364hz
	500	22 0C/ 33%	2 284Vrms	4 649E-3 Irms	59 136Khz	58 912Khz	59 345Khz	55 896hz	21 9C/ 34%	2 290Vrms	4 649E-3 Irms	59 125Khz	58 772Khz	59 350Khz	53 577hz
	600	22 0C/ 33%	2 320Vrms	3 901E-3 Irms	59 136Khz	58 915Khz	59 362Khz	55 072hz	21 9C/ 34%	2 325Vrms	3 896E-3 Irms	59 125Khz	58 860Khz	59 374Khz	61.171hz
	700	22 0C/ 33%	2 342Vrms	3 446E-3 Irms	59 135Khz	58 841Khz	59 354Khz	62 220hz	21 9C/ 34%	2 334Vrms	3 431E-3 Irms	59 137Khz	58 838Khz	59 403Khz	68 646hz
	800	22 0C/ 33%	2 266Vrms	2 939E-3 Irms	59 171Khz	58 947Khz	59 442Khz	69 455hz	21 9C/ 34%	2 296Vrms	2 981E-3 Irms	59 162Khz	58 789Khz	59 536Khz	72 909hz
	900	22 0C/ 33%	2 272Vrms	2 647E-3 Irms	59 173Khz	58 749Khz	59 469Khz	73 391hz	21 9C/ 34%	2 275Vrms	2 639E-3 Irms	59 163Khz	58 853Khz	59 495Khz	75 828hz
	1000	22.0C/ 33%	2 281Vrms	2 454E-3 Irms	59 173Khz	58 875Khz	59 442Khz	72 091hz	21 9C/ 34%	2 286Vrms	2 449E-3 Irms	59 165Khz	58 801Khz	59 430Khz	75.281hz
OP 62021	100	22 3C/ 36%	0 917Vrms	8 935E-3 Irms	59 841Khz	58 962Khz	60 813Khz	199 554hz	22 3C/ 36%	0 958Vrms	8 933E-3 Irms	59 845Khz	58 875Khz	60 772Khz	184 211hz
	200	22 3C/ 36%	1 778Vrms	8 836E-3 Irms	59 838Khz	59 421Khz	60 247Khz	74 617hz	22 3C/ 36%	1 785Vrms	8 753E-3 Irms	59.841Khz	59 339Khz	60 386Khz	75 833hz
	300	22 3C/ 36%	1 868Vrms	6 245E-3 Irms	59 845Khz	59 489Khz	60 198Khz	73 413hz	22 3C/ 36%	1 872Vrms	6 221E-3 Irms	59 848Khz	59 488Khz	60 176Khz	69 017hz
	400	22 3C/ 36%	2 241Vrms	5 631E-3 Irms	59 842Khz	59 570Khz	60 172Khz	55 721hz	22 3C/ 36%	2 242Vrms	5 627E-3 Irms	59 843Khz	59 521Khz	60 132Khz	56 124hz
	500	22 3C/ 36%	2 273Vrms	4 621E-3 Irms	59 843Khz	59 488Khz	60 083Khz	55 684hz	22 3C/ 36%	2 275Vrms	4 633E-3 Irms	59 843Khz	59 603Khz	60 078Khz	53 968hz
	600	22 3C/ 36%	2 298Vrms	3 846E-3 Irms	59 843Khz	59 612Khz	60 078Khz	53 875hz	22 3C/ 36%	2 299Vrms	3 875E-3 Irms	59 843Khz	59 606Khz	60 084Khz	53 234hz
	700	22 3C/ 36%	2 281Vrms	3 338E-3 Irms	59 873Khz	59 625Khz	60 127Khz	63 125hz	22 3C/ 36%	2 284Vrms	3.369E-3 Irms	59 872Khz	59 664Khz	60 127Khz	63 360hz
	800	22 3C/ 36%	2 245Vrms	2 889E-3 Irms	59 875Khz	59 102Khz	60 946Khz	77 728hz	22 3C/ 36%	2 270Vrms	2 953E-3 Irms	59 873Khz	59 177Khz	60 441Khz	67 494hz
	900	22 3C/ 36%	2 249Vrms	2 593E-3 Irms	59 874Khz	59 540Khz	60 246Khz	65 341hz	22 3C/ 36%	2 227Vrms	2 607E-3 Irms	59 873Khz	58 936Khz	60 976Khz	72 381hz
	1000	22.3C/ 36%	2 243Vrms	2 371E-3 Irms	59 875Khz	59.620Khz	60 142Khz	65 586hz	22 3C/ 36%	2.239Vrms	2.425E-3 Irms	59 872Khz	59.624Khz	60.235Khz	65 043hz
SP2 019235	100	22 8C/ 34%	0 946Vrms	9 230E-3 Irms	60 736Khz	59 577Khz	61 881Khz	282 484hz	22 8C/ 34%	0 987Vrms	9 234E-3 Irms	60 737Khz	59 619Khz	62 190Khz	274 901hz
	200	22 8C/ 34%	1 854Vrms	9 227E-3 Irms	60 727Khz	60 201Khz	61 444Khz	161 483hz	22 8C/ 34%	1 876Vrms	9 220E-3 Irms	60 726Khz	60 186Khz	61 404Khz	157 775hz
	300	22 8C/ 34%	2 144Vrms	7 167E-3 Irms	60 718Khz	60 311Khz	61 245Khz	159 871hz	22 8C/ 34%	2 153Vrms	7 171E-3 Irms	60 716Khz	60 346Khz	61 164Khz	158 900hz
	400	22 8C/ 34%	2 419Vrms	6 109E-3 Irms	60 709Khz	60 377Khz	61 150Khz	149 338hz	22 8C/ 34%	2 407Vrms	6 079E-3 Irms	60 706Khz	60 324Khz	61 150Khz	151 499hz
	500	22 8C/ 34%	2 478Vrms	5 075E-3 Irms	60 723Khz	60 295Khz	61 156Khz	156 247hz	22 8C/ 34%	2 477Vrms	5 084E-3 Irms	60 721Khz	60 389Khz	61 160Khz	154 405hz
	600	22 8C/ 34%	2 484Vrms	4 198E-3 Irms	60 729Khz	60 370Khz	61 172Khz	159 459hz	22 8C/ 34%	2 473Vrms	4 176E-3 Irms	60 727Khz	60 358Khz	61 196Khz	159 933hz
	700	22 8C/ 34%	2 483Vrms	3 679E-3 Irms	60 724Khz	60 351Khz	61 194Khz	163 846hz	22 8C/ 34%	2 488Vrms	3 688E-3 Irms	60 724Khz	60 286Khz	61 264Khz	160 865hz
	800	22 8C/ 34%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz	22 8C/ 34%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz
	900	22 8C/ 34%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz	22 8C/ 34%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz
	1000	22 8C/ 34%	0.000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0.000Khz	0 000hz	22 8C/ 34%	0.000Vrms	0 000E+0 Irms	0 000Khz	0.000Khz	0 000Khz	0 000hz
SP2 015625	100	23 4C/ 43%	0 954Vrms	9 299E-3 Irms	60 554Khz	59 516Khz	61 786Khz	213 437hz	23 5C/ 43%	0 999Vrms	9 335E-3 Irms	60 557Khz	59 365Khz	61 786Khz	230 573hz
	200	23 4C/ 43%	1 871Vrms	9 292E-3 Irms	60 522Khz	60 156Khz	60 982Khz	107 404hz	23 5C/ 43%	1 892Vrms	9 279E-3 Irms	60 522Khz	60 068Khz	61 050Khz	106 297hz
	300	23 4C/ 43%	2 172Vrms	7 240E-3 Irms	60 511Khz	60 197Khz	61 008Khz	111 221hz	23 5C/ 43%	2 176Vrms	7 212E-3 Irms	60 511Khz	60 147Khz	60 955Khz	107 539hz
	400	23 4C/ 43%	2 387Vrms	6 002E-3 Irms	60 507Khz	60 221Khz	61 005Khz	97 691hz	23 5C/ 43%	2 384Vrms	5 975E-3 Irms	60 509Khz	60 267Khz	60 984Khz	97 625hz
	500	23 4C/ 43%	2 448Vrms	4 990E-3 Irms	60 528Khz	60 200Khz	61 085Khz	95 582hz	23 5C/ 43%	2 449Vrms	4 981E-3 Irms	60 526Khz	60 161Khz	61 069Khz	98 698hz
	600	23 4C/ 43%	2 463Vrms	4 124E-3 Irms	60 529Khz	60 255Khz	61 013Khz	91 759hz	23 5C/ 43%	2 467Vrms	4 131E-3 Irms	60 527Khz	60 189Khz	60 936Khz	95 222hz
	700	23 4C/ 43%	2 448Vrms	3 579E-3 Irms	60 540Khz	60 182Khz	61 007Khz	91 506hz	23 5C/ 43%	2 442Vrms	3 566E-3 Irms	60 537Khz	60 154Khz	61 000Khz	93 091hz
	800	23 4C/ 43%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz	23 5C/ 43%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz
	900	23 4C/ 43%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz	23 5C/ 43%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz
	1000	23 4C/ 43%	0 000Vrms	0.000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0.000hz	23 5C/ 43%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz
SP2 005602	100	21 8C/ 36%	0 954Vrms	9 246E-3 Irms	60 325Khz	59 189Khz	61 576Khz	237 349hz	21 9C/ 36%	0 997Vrms	9 279E-3 Irms	60 322Khz	58 962Khz	61 506Khz	221 630hz
	200	21 8C/ 36%	1 875Vrms	9 265E-3 Irms	60 301Khz	59 753Khz	60 778Khz	131 599hz	21 9C/ 36%	1 894Vrms	9 253E-3 Irms	60 303Khz	59 809Khz	60 719Khz	126 588hz

SECTION 1 OUTPUT VOLTAGE & FREQUENCY
SUMMARY.XLS BATTERY

	300	21 8C/ 36%	2 161Vrms	7 171E-3 Irms	60 290Khz	59 788Khz	60 718Khz	133 027hz	21 9C/ 36%	2 178Vrms	7 198E-3 Irms	60 291Khz	59 773Khz	60 694Khz	136 161hz
	400	21 8C/ 36%	2 421Vrms	6 063E-3 Irms	60.280Khz	59 844Khz	60 651Khz	127 998hz	21 9C/ 36%	2 411Vrms	6 032E-3 Irms	60 280Khz	59 827Khz	60 642Khz	129 452hz
	500	21 8C/ 36%	2 468Vrms	5 004E-3 Irms	60 302Khz	59 819Khz	60 632Khz	121 283hz	21 9C/ 36%	2 468Vrms	5.016E-3 Irms	60.300Khz	59 875Khz	60 596Khz	119.441hz
	600	21 8C/ 36%	2 479Vrms	4 130E-3 Irms	60.300Khz	59 867Khz	60 598Khz	121 225hz	21 9C/ 36%	2 483Vrms	4 159E-3 Irms	60 300Khz	59 863Khz	60.668Khz	120 880hz
	700	21 8C/ 36%	2 482Vrms	3 605E-3 Irms	60 305Khz	59 903Khz	60.644Khz	123 476hz	21 9C/ 36%	2 478Vrms	3 625E-3 Irms	60 308Khz	59 886Khz	60 710Khz	123 350hz
	800	21 8C/ 36%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0.000Khz	0 000hz	21.9C/ 36%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz
	900	21 8C/ 36%	0.000Vrms	0 000E+0 Irms	0 000Khz	0.000Khz	0 000Khz	0 000hz	21 9C/ 36%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz
	1000	21.8C/ 36%	0 000Vrms	0.000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz	21 9C/ 36%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0.000Khz	0 000hz
SP2 009914	100	23.8C/ 35%	0 954Vrms	9.263E-3 Irms	60 618Khz	59 471Khz	61 786Khz	216 544hz	23 7C/ 36%	0 994Vrms	9 252E-3 Irms	60 618Khz	59 595Khz	61.699Khz	194 127hz
	200	23.8C/ 35%	1.872Vrms	9.264E-3 Irms	60 617Khz	60.187Khz	61 218Khz	88 499hz	23.7C/ 36%	1 889Vrms	9 222E-3 Irms	60 616Khz	60 232Khz	61 019Khz	86 745hz
	300	23 8C/ 35%	2 179Vrms	7.237E-3 Irms	60.613Khz	60 155Khz	61 016Khz	79.155hz	23.7C/ 36%	2 195Vrms	7 246E-3 Irms	60.612Khz	60.201Khz	60.952Khz	82 443hz
	400	23 8C/ 35%	2.441Vrms	6 116E-3 Irms	60.612Khz	60.312Khz	60 917Khz	79 310hz	23.7C/ 36%	2 438Vrms	6 094E-3 Irms	60 613Khz	60.281Khz	60 977Khz	82 193hz
	500	23.8C/ 35%	2.486Vrms	5 042E-3 Irms	60 609Khz	60 270Khz	60 974Khz	85.269hz	23 7C/ 36%	2 476Vrms	5 019E-3 Irms	60 609Khz	60 276Khz	60 976Khz	85.500hz
	600	23 8C/ 35%	2.515Vrms	4 199E-3 Irms	60 608Khz	60 244Khz	60 906Khz	82 733hz	23 7C/ 36%	2 510Vrms	4 184E-3 Irms	60 607Khz	60 275Khz	60 931Khz	84 221hz
	700	23 8C/ 35%	2 502Vrms	3 629E-3 Irms	60 608Khz	60 230Khz	60.946Khz	80 896hz	23 7C/ 36%	2 491Vrms	3 622E-3 Irms	60 607Khz	60 272Khz	60.994Khz	80.432hz
	800	23 8C/ 35%	0.000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz	23 7C/ 36%	0 000Vrms	0 000E+0 Irms	0.000Khz	0 000Khz	0.000Khz	0 000hz
	900	23 8C/ 35%	0 000Vrms	0.000E+0 Irms	0.000Khz	0 000Khz	0 000Khz	0 000hz	23 7C/ 36%	0 000Vrms	0 000E+0 Irms	0.000Khz	0 000Khz	0.000Khz	0 000hz
	1000	23 8C/ 35%	0 000Vrms	0.000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz	23 7C/ 36%	0.000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz

Section 1 Output Voltage & Frequency Summary.xls Power Source - Low Voltage

Date		Resitive load tests.....							AAMI Load Tests.....						
Device/Serial#	Rseries	Ambient Temp/humidity	Vpp (RMS)	Ipp (RMS)	Frequency	Freq min	Freq max	Freq StdDev	Ambient Temp	Vpp (RMS)	Ipp (RMS)	Frequency	Freq min	Freq max	Freq StdDev
SP1 S13787	100	24 3C/ 40%	0 973Vrms	9 506E-3 Irms	58 556Khz	57 479Khz	59 737Khz	222 541hz	24 3C/ 40%	1 003Vrms	9 355E-3 Irms	58 547Khz	57 488Khz	59 451Khz	241 093hz
	200	24 3C/ 40%	1 108Vrms	5 565E-3 Irms	58 561Khz	57 504Khz	59 666Khz	220 611hz	24 3C/ 40%	1 133Vrms	5 615E-3 Irms	58 553Khz	57 720Khz	59 400Khz	189 890hz
	300	24 3C/ 40%	2 144Vrms	7 210E-3 Irms	58 545Khz	58 201Khz	58 928Khz	71 205hz	24 3C/ 40%	2 141Vrms	7 149E-3 Irms	58 544Khz	58 266Khz	58 822Khz	70 292hz
	400	24 3C/ 40%	2 199Vrms	5 583E-3 Irms	58 551Khz	58 190Khz	58 962Khz	69 691hz	24 3C/ 40%	2 196Vrms	5 555E-3 Irms	58 552Khz	58 096Khz	58 941Khz	69 174hz
	500	24 3C/ 40%	2 233Vrms	4 594E-3 Irms	58 554Khz	58 250Khz	58 890Khz	69 022hz	24 3C/ 40%	2 230Vrms	4 585E-3 Irms	58 557Khz	58 238Khz	58 880Khz	68 401hz
	600	24 3C/ 40%	2 146Vrms	3 648E-3 Irms	58 560Khz	58 161Khz	58 853Khz	69 718hz	24 3C/ 40%	2 142Vrms	3 650E-3 Irms	58 562Khz	58 239Khz	58 870Khz	70 518hz
	700	24 3C/ 40%	2 172Vrms	3 238E-3 Irms	58 593Khz	57 029Khz	59 791Khz	84 751hz	24 3C/ 40%	2 164Vrms	3 242E-3 Irms	58 594Khz	57 887Khz	59 719Khz	84 797hz
	800	24 3C/ 40%	2 181Vrms	2 863E-3 Irms	58 597Khz	57 307Khz	59 755Khz	88 202hz	24 3C/ 40%	2 188Vrms	2 889E-3 Irms	58 597Khz	58 180Khz	59 154Khz	78 229hz
	900	24 3C/ 40%	2 186Vrms	2 570E-3 Irms	58 598Khz	57 424Khz	59 708Khz	83 349hz	24 3C/ 40%	2 186Vrms	2 593E-3 Irms	58 599Khz	57 803Khz	59 488Khz	84 672hz
	1000	24.3C/ 40%	2 195Vrms	2 384E-3 Irms	58.597Khz	57 870Khz	59 773Khz	83 973hz	24 3C/ 40%	2 206Vrms	2 420E-3 Irms	58 600Khz	58.224Khz	59 282Khz	81 091hz
SP1 A65120	100	22 3C/ 34%	0 994Vrms	9 731E-3 Irms	59 146Khz	57 837Khz	60 657Khz	464 197hz	22 3C/ 34%	1 037Vrms	9 699E-3 Irms	59 140Khz	57 876Khz	60 697Khz	473 825hz
	200	22 3C/ 34%	1 170Vrms	5 896E-3 Irms	59 154Khz	57 993Khz	60.390Khz	444 268hz	22 3C/ 34%	1 210Vrms	6 005E-3 Irms	59 152Khz	57 983Khz	60 495Khz	445 802hz
	300	22 3C/ 34%	2 301Vrms	7 759E-3 Irms	59 135Khz	58 304Khz	60 047Khz	229 609hz	22 3C/ 34%	2 300Vrms	7 693E-3 Irms	59 132Khz	58 129Khz	60 254Khz	244 521hz
	400	22 3C/ 34%	2 312Vrms	5 900E-3 Irms	59 145Khz	58 263Khz	60 227Khz	239 109hz	22 3C/ 34%	2 309Vrms	5 863E-3 Irms	59 144Khz	58 283Khz	60 096Khz	242 761hz
	500	22 3C/ 34%	2 236Vrms	4 628E-3 Irms	59 155Khz	58 245Khz	60 126Khz	239 296hz	22 3C/ 34%	2 118Vrms	4 389E-3 Irms	59 161Khz	57 720Khz	61 143Khz	303 059hz
	600	22 3C/ 34%	2 271Vrms	3 888E-3 Irms	59 158Khz	58 254Khz	59 935Khz	242 785hz	22 3C/ 34%	2 268Vrms	3 882E-3 Irms	59 158Khz	58 271Khz	60 103Khz	257 428hz
	700	22 3C/ 34%	2 254Vrms	3 386E-3 Irms	59 191Khz	58 038Khz	60 396Khz	258 233hz	22 3C/ 34%	2 279Vrms	3 426E-3 Irms	59 190Khz	57 604Khz	60 624Khz	256 143hz
	800	22 3C/ 34%	2 259Vrms	2 986E-3 Irms	59 197Khz	58 179Khz	60 454Khz	256 132hz	22 3C/ 34%	2 260Vrms	2 998E-3 Irms	59 197Khz	58 328Khz	60 134Khz	259 910hz
	900	22 3C/ 34%	2 286Vrms	2 714E-3 Irms	59 198Khz	58 229Khz	60 153Khz	244 252hz	22 3C/ 34%	2 286Vrms	2 722E-3 Irms	59 196Khz	58 223Khz	60 068Khz	252 084hz
	1000	22 3C/ 34%	2 296Vrms	2.514E-3 Irms	59.199Khz	58.249Khz	60.229Khz	244 941hz	22.3C/ 34%	2.295Vrms	2 528E-3 Irms	59.198Khz	58 190Khz	60.019Khz	254 532hz
OP 62021	100	22 3C/ 36%	0 918Vrms	8 937E-3 Irms	59 840Khz	58 962Khz	60 809Khz	196 074hz	22 3C/ 36%	0 957Vrms	8 932E-3 Irms	59 844Khz	59 032Khz	60 628Khz	182 392hz
	200	22 3C/ 36%	1 778Vrms	8 834E-3 Irms	59 833Khz	59 427Khz	60 349Khz	93 619hz	22 3C/ 36%	1 783Vrms	8 757E-3 Irms	59 836Khz	59 445Khz	60 205Khz	90 956hz
	300	22 3C/ 36%	1 867Vrms	6 247E-3 Irms	59 838Khz	59 445Khz	60 248Khz	87 397hz	22 3C/ 36%	1 870Vrms	6 221E-3 Irms	59 840Khz	59 395Khz	60 259Khz	89 209hz
	400	22 3C/ 36%	2 238Vrms	5 630E-3 Irms	59 834Khz	59 592Khz	60 141Khz	64 008hz	22 3C/ 36%	2 241Vrms	5 616E-3 Irms	59 835Khz	59 526Khz	60 091Khz	68 095hz
	500	22 3C/ 36%	2 271Vrms	4 625E-3 Irms	59 835Khz	59 607Khz	60 101Khz	62 085hz	22 3C/ 36%	2 273Vrms	4 625E-3 Irms	59 835Khz	59 527Khz	60 132Khz	68 363hz
	600	22 3C/ 36%	2 297Vrms	3 851E-3 Irms	59 836Khz	59 604Khz	60 147Khz	63 992hz	22 3C/ 36%	2 298Vrms	3 859E-3 Irms	59 836Khz	59 577Khz	60 077Khz	68 632hz
	700	22 3C/ 36%	2 281Vrms	3 348E-3 Irms	59 865Khz	59 530Khz	60 167Khz	72 855hz	22 3C/ 36%	2 281Vrms	3 355E-3 Irms	59 867Khz	59 594Khz	60 135Khz	76 455hz
	800	22 3C/ 36%	2 293Vrms	2 955E-3 Irms	59 867Khz	59 617Khz	60 137Khz	70 740hz	22 3C/ 36%	2 257Vrms	2 922E-3 Irms	59 867Khz	58 436Khz	60 117Khz	80 615hz
	900	22 3C/ 36%	2 231Vrms	2 577E-3 Irms	59 867Khz	59 434Khz	60 300Khz	75 238hz	22 3C/ 36%	2 231Vrms	2 597E-3 Irms	59 867Khz	59 596Khz	60 142Khz	79 358hz
	1000	22 3C/ 36%	2 237Vrms	2.379E-3 Irms	59 868Khz	59.589Khz	60 144Khz	76.815hz	22 3C/ 36%	2 238Vrms	2 397E-3 Irms	59 867Khz	59 432Khz	60 243Khz	79.875hz
SP2 019235	100	22 7C/ 34%	0 944Vrms	9 239E-3 Irms	60 737Khz	59 319Khz	61 881Khz	294 194hz	22 8C/ 34%	0 985Vrms	9 236E-3 Irms	60 737Khz	59 382Khz	61 843Khz	317 426hz
	200	22 7C/ 34%	1 859Vrms	9 304E-3 Irms	60 747Khz	60 064Khz	61 265Khz	181 416hz	22 8C/ 34%	1 875Vrms	9 255E-3 Irms	60 747Khz	60 097Khz	61 194Khz	166 803hz
	300	22 7C/ 34%	2 149Vrms	7 249E-3 Irms	60 749Khz	60 187Khz	61 172Khz	154 056hz	22 8C/ 34%	2 150Vrms	7 199E-3 Irms	60 750Khz	60 153Khz	61 232Khz	151 671hz
	400	22 7C/ 34%	2 488Vrms	6 354E-3 Irms	60 753Khz	60 261Khz	61 085Khz	121 094hz	22 8C/ 34%	2 490Vrms	6 330E-3 Irms	60 754Khz	60 237Khz	61 116Khz	119 183hz
	500	22 7C/ 34%	2 548Vrms	5 306E-3 Irms	60 750Khz	60 279Khz	61 121Khz	129 515hz	22 8C/ 34%	2 538Vrms	5 264E-3 Irms	60 751Khz	60 218Khz	61 158Khz	127 364hz
	600	22 7C/ 34%	2 557Vrms	4 403E-3 Irms	60 750Khz	60 220Khz	61 182Khz	136 859hz	22 8C/ 34%	2 553Vrms	4 376E-3 Irms	60 750Khz	60 238Khz	61 180Khz	134 270hz
	700	22 7C/ 34%	2 550Vrms	3 839E-3 Irms	60 749Khz	60 156Khz	61 170Khz	144 157hz	22 8C/ 34%	2 556Vrms	3 838E-3 Irms	60 748Khz	60 277Khz	61 187Khz	137 111hz
	800	22 7C/ 34%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz	22 8C/ 34%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz
	900	22 7C/ 34%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz	22 8C/ 34%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz
	1000	22 7C/ 34%	0 000Vrms	0.000E+0 Irms	0 000Khz	0.000Khz	0 000Khz	0.000hz	22.8C/ 34%	0.000Vrms	0 000E+0 Irms	0 000Khz	0.000Khz	0 000Khz	0 000hz
SP2 015625	100	23 7C/ 43%	0 934Vrms	9 090E-3 Irms	60 551Khz	59 224Khz	61 823Khz	251 424hz	23 8C/ 43%	0 975Vrms	9 100E-3 Irms	60 551Khz	59 524Khz	61 728Khz	224 946hz
	200	23 7C/ 43%	1 829Vrms	9 070E-3 Irms	60 540Khz	60 078Khz	61 011Khz	115 905hz	23 8C/ 43%	1 848Vrms	9 059E-3 Irms	60 539Khz	60 114Khz	61 105Khz	116 083hz
	300	23 7C/ 43%	2 114Vrms	7 039E-3 Irms	60 531Khz	60 143Khz	61 058Khz	122 865hz	23 8C/ 43%	2 123Vrms	7 035E-3 Irms	60 531Khz	60 204Khz	61 060Khz	121 089hz
	400	23 7C/ 43%	2 383Vrms	5 983E-3 Irms	60 529Khz	60 169Khz	61 021Khz	121 088hz	23 8C/ 43%	2 388Vrms	5 985E-3 Irms	60 528Khz	60 222Khz	61 026Khz	119 351hz
	500	23 7C/ 43%	2 435Vrms	4 943E-3 Irms	60 526Khz	60 182Khz	61 033Khz	119 261hz	23 8C/ 43%	2 436Vrms	4 953E-3 Irms	60 526Khz	60 160Khz	61 050Khz	121 271hz
	600	23 7C/ 43%	2 455Vrms	4 091E-3 Irms	60 522Khz	60 107Khz	61 001Khz	114 667hz	23 8C/ 43%	2 446Vrms	4 086E-3 Irms	60 522Khz	60 187Khz	61 006Khz	117 411hz
	700	23 7C/ 43%	2 455Vrms	3 566E-3 Irms	60 515Khz	60 250Khz	61 010Khz	106 120hz	23 8C/ 43%	2 452Vrms	3 577E-3 Irms	60 516Khz	60 188Khz	61 003Khz	107 452hz
	800	23 7C/ 43%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz	23 8C/ 43%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz
	900	23 7C/ 43%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz	23 8C/ 43%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz
	1000	23 7C/ 43%	0 000Vrms	0.000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0.000hz	23 8C/ 43%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz
SP2 005602	100	22 2C/ 35%	0 942Vrms	9 162E-3 Irms	60 321Khz	59 036Khz	61 542Khz	317 101hz	22 2C/ 35%	0 976Vrms	9 111E-3 Irms	60 321Khz	58 970Khz	61 374Khz	293 440hz

200	22 2C/ 35%	1 832Vrms	9 085E-3 Irms	60 312Khz	59 513Khz	60 885Khz	187 713hz	22 2C/ 35%	1 848Vrms	9 068E-3 Irms	60 313Khz	59 588Khz	60 808Khz	188 353hz
300	22 2C/ 35%	2 113Vrms	7 032E-3 Irms	60 307Khz	59 572Khz	60 829Khz	184 169hz	22 2C/ 35%	2 133Vrms	7 080E-3 Irms	60 308Khz	59 617Khz	60 841Khz	182 591hz
400	22 2C/ 35%	2 428Vrms	6.097E-3 Irms	60 304Khz	59 700Khz	60 772Khz	171 580hz	22 2C/ 35%	2 435Vrms	6 114E-3 Irms	60 303Khz	59 672Khz	60 754Khz	173.968hz
500	22 2C/ 35%	2 457Vrms	4 997E-3 Irms	60 298Khz	59 710Khz	60 768Khz	166 513hz	22 2C/ 35%	2 457Vrms	5 015E-3 Irms	60 297Khz	59 664Khz	60 771Khz	171 086hz
600	22 2C/ 35%	2 469Vrms	4 127E-3 Irms	60 283Khz	59 600Khz	60 728Khz	164 469hz	22 2C/ 35%	2 465Vrms	4 151E-3 Irms	60 283Khz	59 718Khz	60 742Khz	162 582hz
700	22 2C/ 35%	2 476Vrms	3 613E-3 Irms	60 308Khz	59 690Khz	60 766Khz	160 772hz	22 2C/ 35%	2 471Vrms	3 633E-3 Irms	60 307Khz	59 678Khz	60.715Khz	162 358hz
800	22 2C/ 35%	2 484Vrms	3 175E-3 Irms	60 298Khz	59 665Khz	60 790Khz	171 962hz	22 2C/ 35%	2 476Vrms	3.197E-3 Irms	60 296Khz	59 584Khz	60 758Khz	172 397hz
900	22 2C/ 35%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz	22 2C/ 35%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz
1000	22 2C/ 35%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz	22 2C/ 35%	0 000Vrms	0 000E+0 Irms	0 000Khz	0.000Khz	0 000Khz	0 000hz

Section 1Output Voltage & Frequency Summary.xls Power Source - Normal Voltage

Date		Resitive load tests.....							AAMI Load Tests.....						
Device/Serial#	Rseries	Ambient Temp/humidity	Vpp (RMS)	Ipp (RMS)	Frequency	Freq min	Freq max	Freq StdDev	Ambient Temp	Vpp (RMS)	Ipp (RMS)	Frequency	Freq min	Freq max	Freq StdDev
SP1 S13787	100	24 3C/ 41%	0 988Vrms	9 662E-3 Irms	58 546Khz	57 438Khz	59 666Khz	225 193hz	24 3C/ 40%	0 997Vrms	9 313E-3 Irms	58 544Khz	57 537Khz	59 719Khz	249 392hz
	200	24 3C/ 41%	1 125Vrms	5 653E-3 Irms	58 558Khz	57 384Khz	59 666Khz	199 772hz	24 3C/ 40%	1 125Vrms	5 583E-3 Irms	58 553Khz	57 487Khz	59 464Khz	188 644hz
	300	24 3C/ 41%	2 135Vrms	7 179E-3 Irms	58 552Khz	58 224Khz	58 917Khz	82 366hz	24 3C/ 40%	2 137Vrms	7 137E-3 Irms	58 549Khz	57 987Khz	59 116Khz	86 971hz
	400	24 3C/ 41%	2 192Vrms	5 565E-3 Irms	58 559Khz	58 002Khz	59 134Khz	83 733hz	24 3C/ 40%	2 191Vrms	5 544E-3 Irms	58 565Khz	58 077Khz	59 126Khz	89 682hz
	500	24 3C/ 41%	2 224Vrms	4 577E-3 Irms	58 566Khz	57 975Khz	59 107Khz	85 789hz	24 3C/ 40%	2 225Vrms	4 581E-3 Irms	58 574Khz	57 948Khz	59 284Khz	93 548hz
	600	24 3C/ 41%	2 043Vrms	3 485E-3 Irms	58 582Khz	57 348Khz	59 809Khz	124 517hz	24 3C/ 40%	2 137Vrms	3 637E-3 Irms	58 581Khz	58 164Khz	58 961Khz	87 924hz
	700	24 3C/ 41%	2 169Vrms	3 234E-3 Irms	58 613Khz	58 029Khz	59 209Khz	98 871hz	24 3C/ 40%	2 172Vrms	3 251E-3 Irms	58 612Khz	57 605Khz	59 400Khz	102 587hz
	800	24 3C/ 41%	2 171Vrms	2 851E-3 Irms	58 613Khz	57 159Khz	60 042Khz	104 982hz	24 3C/ 40%	2 176Vrms	2 875E-3 Irms	58 617Khz	57 821Khz	59 326Khz	98 510hz
	900	24 3C/ 41%	2 183Vrms	2 568E-3 Irms	58 615Khz	58 089Khz	59 242Khz	98 427hz	24 3C/ 40%	2 202Vrms	2 608E-3 Irms	58 617Khz	57 893Khz	59 312Khz	101 479hz
	1000	24 3C/ 41%	2 209Vrms	2 395E-3 Irms	58 614Khz	57 687Khz	59.357Khz	104.348hz	24.3C/ 40%	2 182Vrms	2 399E-3 Irms	58 619Khz	57.687Khz	59 684Khz	105 735hz
SP1 A65120	100	22 3C/ 34%	0 988Vrms	9 676E-3 Irms	59 137Khz	57 753Khz	60 661Khz	485 426hz	22 2C/ 33%	1 046Vrms	9 736E-3 Irms	59 118Khz	57 883Khz	60 496Khz	448 271hz
	200	22 3C/ 34%	1 162Vrms	5 855E-3 Irms	59 156Khz	57 973Khz	60 486Khz	447 794hz	22 2C/ 33%	1 218Vrms	6 040E-3 Irms	59 137Khz	57.820Khz	60 693Khz	420 739hz
	300	22 3C/ 34%	2 296Vrms	7 740E-3 Irms	59 141Khz	58 215Khz	59 954Khz	230 113hz	22 2C/ 33%	2 274Vrms	7 575E-3 Irms	59 128Khz	58 160Khz	60 077Khz	238 437hz
	400	22 3C/ 34%	2 305Vrms	5 878E-3 Irms	59 158Khz	58 303Khz	59 960Khz	235 014hz	22 2C/ 33%	2 285Vrms	5 788E-3 Irms	59 151Khz	58 266Khz	60 118Khz	229 662hz
	500	22 3C/ 34%	2 254Vrms	4 673E-3 Irms	59 173Khz	57 704Khz	60 827Khz	255 863hz	22 2C/ 33%	2 328Vrms	4 804E-3 Irms	59 162Khz	58 353Khz	59 988Khz	232 956hz
	600	22 3C/ 34%	2 264Vrms	3 871E-3 Irms	59 178Khz	58 309Khz	60 025Khz	242 868hz	22 2C/ 33%	2 243Vrms	3 839E-3 Irms	59 173Khz	58 279Khz	60 060Khz	240 010hz
	700	22 3C/ 34%	2 303Vrms	3 451E-3 Irms	59 208Khz	58 190Khz	60 389Khz	245 932hz	22 2C/ 33%	2 285Vrms	3 439E-3 Irms	59 203Khz	58 302Khz	60 104Khz	243 293hz
	800	22 3C/ 34%	2 235Vrms	2 949E-3 Irms	59 219Khz	57 965Khz	60 661Khz	264 998hz	22 2C/ 33%	2 295Vrms	3 050E-3 Irms	59 212Khz	58 347Khz	60 145Khz	241 234hz
	900	22 3C/ 34%	2 281Vrms	2 703E-3 Irms	59 221Khz	58 377Khz	60 071Khz	247 080hz	22 2C/ 33%	2 255Vrms	2 708E-3 Irms	59 216Khz	58 029Khz	60 698Khz	251 535hz
	1000	22.3C/ 34%	2.291Vrms	2 501E-3 Irms	59 222Khz	58.395Khz	60 295Khz	242.422hz	22 2C/ 33%	2.274Vrms	2.529E-3 Irms	59.216Khz	58.241Khz	60 259Khz	244 974hz
OP 62021	100	22 3C/ 36%	0 913Vrms	8 895E-3 Irms	59 836Khz	58 824Khz	61 013Khz	217 225hz	22 3C/ 36%	0 955Vrms	8 912E-3 Irms	59 840Khz	59 053Khz	60 901Khz	184 239hz
	200	22 3C/ 36%	1 770Vrms	8 790E-3 Irms	59 836Khz	59 517Khz	60 223Khz	83 673hz	22 3C/ 36%	1 783Vrms	8 755E-3 Irms	59 835Khz	59 481Khz	60 309Khz	82 761hz
	300	22 3C/ 36%	1 860Vrms	6 220E-3 Irms	59 845Khz	59 425Khz	60 254Khz	93 472hz	22 3C/ 36%	1 870Vrms	6 229E-3 Irms	59 843Khz	59 524Khz	60 184Khz	84 081hz
	400	22 3C/ 36%	2 225Vrms	5 591E-3 Irms	59 842Khz	59 539Khz	60 168Khz	72 531hz	22 3C/ 36%	2 240Vrms	5 631E-3 Irms	59 838Khz	59 505Khz	60 168Khz	70 785hz
	500	22 3C/ 36%	2 264Vrms	4 601E-3 Irms	59 841Khz	59 561Khz	60 117Khz	72 595hz	22 3C/ 36%	2 273Vrms	4 639E-3 Irms	59 839Khz	59 502Khz	60 130Khz	70 555hz
	600	22 3C/ 36%	2 289Vrms	3 837E-3 Irms	59 842Khz	59 538Khz	60 147Khz	74 541hz	22 3C/ 36%	2 298Vrms	3 875E-3 Irms	59 840Khz	59 572Khz	60 168Khz	69 853hz
	700	22 3C/ 36%	2 274Vrms	3 342E-3 Irms	59 871Khz	59 594Khz	60 160Khz	77 718hz	22 3C/ 36%	2 278Vrms	3 363E-3 Irms	59 872Khz	59 564Khz	60.221Khz	79 769hz
	800	22 3C/ 36%	2 288Vrms	2 948E-3 Irms	59 870Khz	59 603Khz	60 206Khz	79 357hz	22 3C/ 36%	2 292Vrms	2 983E-3 Irms	59 871Khz	59 610Khz	60 191Khz	77 717hz
	900	22 3C/ 36%	2 269Vrms	2 607E-3 Irms	59 872Khz	59 613Khz	60 182Khz	78 395hz	22 3C/ 36%	2 241Vrms	2 632E-3 Irms	59 872Khz	59 418Khz	60 842Khz	82 892hz
	1000	22.3C/ 36%	2 251Vrms	2 391E-3 Irms	59 871Khz	59.123Khz	60 643Khz	86.675hz	22.3C/ 36%	2 245Vrms	2 444E-3 Irms	59 872Khz	59 590Khz	60 181Khz	81.415hz
SP2 019235	100	22 8C/ 34%	0 944Vrms	9 251E-3 Irms	60 739Khz	59 361Khz	62 041Khz	276 055hz	22 7C/ 34%	0 984Vrms	9 232E-3 Irms	60 743Khz	59 382Khz	62 189Khz	276 927hz
	200	22 8C/ 34%	1 855Vrms	9 293E-3 Irms	60 746Khz	60 083Khz	61 348Khz	189 698hz	22 7C/ 34%	1 874Vrms	9 256E-3 Irms	60 751Khz	60 052Khz	61 240Khz	177 167hz
	300	22 8C/ 34%	2 135Vrms	7 205E-3 Irms	60 746Khz	60 237Khz	61.222Khz	152 918hz	22 7C/ 34%	2 152Vrms	7 213E-3 Irms	60 748Khz	60 045Khz	61 215Khz	153 843hz
	400	22 8C/ 34%	2 492Vrms	6 363E-3 Irms	60 755Khz	60 314Khz	61 104Khz	121 175hz	22 7C/ 34%	2 495Vrms	6 352E-3 Irms	60 756Khz	60 319Khz	61 157Khz	122 419hz
	500	22 8C/ 34%	2 540Vrms	5 280E-3 Irms	60 751Khz	60 295Khz	61 176Khz	125 814hz	22 7C/ 34%	2 536Vrms	5 270E-3 Irms	60 752Khz	60 339Khz	61 100Khz	124 127hz
	600	22 8C/ 34%	2 548Vrms	4 372E-3 Irms	60 748Khz	60 323Khz	61 165Khz	133 687hz	22 7C/ 34%	2 552Vrms	4 390E-3 Irms	60 750Khz	60 250Khz	61 145Khz	131 830hz
	700	22 8C/ 34%	2 560Vrms	3 843E-3 Irms	60 748Khz	60 311Khz	61 168Khz	128 708hz	22 7C/ 34%	2 567Vrms	3 872E-3 Irms	60 749Khz	60 314Khz	61 122Khz	127 234hz
	800	22 8C/ 34%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz	22 7C/ 34%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz
	900	22 8C/ 34%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz	22 7C/ 34%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz
	1000	22 8C/ 34%	0 000Vrms	0.000E+0 Irms	0.000Khz	0 000Khz	0 000Khz	0 000hz	22 7C/ 34%	0 000Vrms	0.000E+0 Irms	0.000Khz	0 000Khz	0 000Khz	0 000hz
SP2 015625	100	23 5C/ 43%	0 948Vrms	9 232E-3 Irms	60 555Khz	59 423Khz	61 786Khz	229 656hz	23 5C/ 43%	0 988Vrms	9 225E-3 Irms	60 556Khz	59 577Khz	61 706Khz	214 981hz
	200	23 5C/ 43%	1 832Vrms	9 093E-3 Irms	60 527Khz	60 185Khz	61 085Khz	116 276hz	23 5C/ 43%	1 852Vrms	9 081E-3 Irms	60 527Khz	60 070Khz	61 094Khz	116 401hz
	300	23 5C/ 43%	2 120Vrms	7 060E-3 Irms	60 513Khz	60 205Khz	61 158Khz	109 605hz	23 5C/ 43%	2 128Vrms	7 052E-3 Irms	60 512Khz	60 180Khz	61 033Khz	110 156hz
	400	23 5C/ 43%	2 385Vrms	5 990E-3 Irms	60 514Khz	60 244Khz	61 033Khz	104 842hz	23 5C/ 43%	2 381Vrms	5 974E-3 Irms	60 509Khz	60 225Khz	60 967Khz	101 607hz
	500	23 5C/ 43%	2 433Vrms	4 948E-3 Irms	60 516Khz	60 242Khz	61 034Khz	97 061hz	23 5C/ 43%	2 430Vrms	4 941E-3 Irms	60 512Khz	60 203Khz	60 988Khz	98 343hz
	600	23 5C/ 43%	2 456Vrms	4 110E-3 Irms	60 532Khz	60 250Khz	60 960Khz	91 199hz	23 5C/ 43%	2 427Vrms	4 063E-3 Irms	60 526Khz	60 205Khz	60 916Khz	93 465hz
	700	23 5C/ 43%	2 462Vrms	3 589E-3 Irms	60 541Khz	60 305Khz	60 914Khz	89 600hz	23 5C/ 43%	2 457Vrms	3 590E-3 Irms	60 537Khz	60 207Khz	60 939Khz	91 157hz
	800	23 5C/ 43%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz	23 5C/ 43%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz
	900	23 5C/ 43%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz	23 5C/ 43%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz
	1000	23 5C/ 43%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0.000Khz	0 000hz	23 5C/ 43%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz
SP2 005602	100	21 9C/ 36%	0 942Vrms	9 130E-3 Irms	60 326Khz	58 824Khz	61 370Khz	316 196hz	22 0C/ 35%	0 986Vrms	9 176E-3 Irms	60 327Khz	58 883Khz	61 350Khz	293 860hz

200	21 9C/ 36%	1 831Vrms	9 045E-3 Irms	60 302Khz	59 567Khz	60 788Khz	183 409hz	22 0C/ 35%	1 855Vrms	9 062E-3 Irms	60 304Khz	59 545Khz	60 851Khz	177 683hz
300	21 9C/ 36%	2 113Vrms	7 010E-3 Irms	60.289Khz	59 595Khz	60 753Khz	172 362hz	22 0C/ 35%	2 122Vrms	7 019E-3 Irms	60 288Khz	59 635Khz	60 751Khz	170 163hz
400	21 9C/ 36%	2.407Vrms	6 024E-3 Irms	60 278Khz	59 705Khz	60.778Khz	159 249hz	22 0C/ 35%	2 422Vrms	6 062E-3 Irms	60 278Khz	59 719Khz	60 827Khz	159 359hz
500	21 9C/ 36%	2 473Vrms	5 012E-3 Irms	60 305Khz	59 785Khz	60 705Khz	155 264hz	22 0C/ 35%	2 464Vrms	5 013E-3 Irms	60 301Khz	59 711Khz	60 696Khz	154 379hz
600	21 9C/ 36%	2 465Vrms	4 101E-3 Irms	60 309Khz	59 720Khz	60 718Khz	155 317hz	22 0C/ 35%	2 467Vrms	4 139E-3 Irms	60 308Khz	59 714Khz	60 714Khz	155 820hz
700	21 9C/ 36%	2 469Vrms	3 585E-3 Irms	60 305Khz	59 684Khz	60 722Khz	157 698hz	22.0C/ 35%	2 479Vrms	3 642E-3 Irms	60.307Khz	59 744Khz	60.747Khz	158 578hz
800	21 9C/ 36%	0.000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz	22 0C/ 35%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz
900	21 9C/ 36%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0.000Khz	0 000hz	22 0C/ 35%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz
1000	21 9C/ 36%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz	22 0C/ 35%	0 000Vrms	0 000E+0 Irms	0 000Khz	0 000Khz	0 000Khz	0 000hz

Mean	6.611943	2.242411	0.027623	0.005627	59843.07	1.67E-05
Max	6.673384	2.243841	0.031157	0.005654	60132.29	1.68E-05
Min	6.364022	2.152947	0.025633	0.005406	59520.95	1.67E-05
Num	205	205	205	205	5740	410
St Dev	0.031596	0.006303	0.000775	1.87E-05	56.124	1.55E-08

	P1	P2	P3	P4	P5	P6	11:27:17
	pkpk(C1)	rms(C1)	pkpk(C2)	rms(C2)	freq(C1)	period(F1)	
Value	6.673384	2.274954	0.025854	0.004643	59831.42	1.67E-05	
Mean	6.698421	2.274776	0.02491	0.004633	59842.83	1.67E-05	
Max	6.761773	2.275804	0.026738	0.004662	60078.2	1.68E-05	
Min	6.62919	2.260365	0.022981	0.004594	59602.93	1.67E-05	
Num	203	203	203	203	5684	406	
St Dev	0.025925	0.00122	0.000742	1.2E-05	53.96777	1.52E-08	

	P1	P2	P3	P4	P5	P6	11:27:41
	pkpk(C1)	rms(C1)	pkpk(C2)	rms(C2)	freq(C1)	period(F1)	
Value	6.717579	2.299924	0.023644	0.003888	59772.58	1.67E-05	
Mean	6.749425	2.299423	0.02285	0.003875	59842.5	1.67E-05	
Max	6.850163	2.301262	0.025633	0.003902	60083.94	1.68E-05	
Min	6.5408	2.209149	0.020992	0.003729	59606.18	1.66E-05	
Num	204	204	204	204	5712	408	
St Dev	0.035425	0.007255	0.000743	1.72E-05	53.23375	1.44E-08	

	P1	P2	P3	P4	P5	P6	11:28:06
	pkpk(C1)	rms(C1)	pkpk(C2)	rms(C2)	freq(C1)	period(F1)	
Value	6.761773	2.315951	0.022097	0.00342	59858.44	1.67E-05	
Mean	6.717359	2.28352	0.021562	0.003369	59871.69	1.67E-05	
Max	6.850163	2.316698	0.024307	0.003448	60127.12	1.68E-05	
Min	6.584995	2.248131	0.019667	0.003275	59664.35	1.67E-05	

Num	201	201	201	201	5628	402
St Dev	0.090077	0.033266	0.000871	5.08E-05	63.35988	1.66E-08

	P1	P2	P3	P4	P5	P6	11:28:30
	pkpk(C1)	rms(C1)	pkpk(C2)	rms(C2)	freq(C1)	period(F1)	
Value	6.850163	2.32959	0.021213	0.003029	59857.48	1.67E-05	
Mean	6.678827	2.269617	0.020471	0.002953	59872.9	1.67E-05	
Max	6.894357	2.330236	0.022539	0.003057	60441.22	1.68E-05	
Min	2.077146	0.611206	0.01591	0.001217	59176.87	1.66E-05	
Num	203	203	203	203	5684	406	
St Dev	0.372893	0.135064	0.00084	0.000147	67.49431	1.78E-08	

	P1	P2	P3	P4	P5	P6	11:28:58
	pkpk(C1)	rms(C1)	pkpk(C2)	rms(C2)	freq(C1)	period(F1)	
Value	6.62919	2.264755	0.019004	0.002616	59801.26	1.67E-05	
Mean	6.570844	2.22699	0.01961	0.002607	59872.55	1.67E-05	
Max	6.805968	2.319385	0.02276	0.002704	60975.61	1.69E-05	
Min	2.077146	0.614842	0.014805	0.00117	58936.14	1.67E-05	
Num	203	203	203	203	5684	406	
St Dev	0.327597	0.118182	0.000875	0.000108	72.38127	1.97E-08	

	P1	P2	P3	P4	P5	P6	11:29:28
	pkpk(C1)	rms(C1)	pkpk(C2)	rms(C2)	freq(C1)	period(F1)	
Value	6.62919	2.272104	0.019004	0.00245	59924.36	1.67E-05	
Mean	6.606455	2.238898	0.01913	0.002425	59872	1.67E-05	
Max	6.761773	2.272526	0.021655	0.002487	60235.14	1.68E-05	
Min	6.452411	2.205089	0.017015	0.002344	59624.25	1.66E-05	
Num	208	208	208	208	5824	416	
St Dev	0.086779	0.032905	0.000831	3.48E-05	65.04313	1.81E-08	

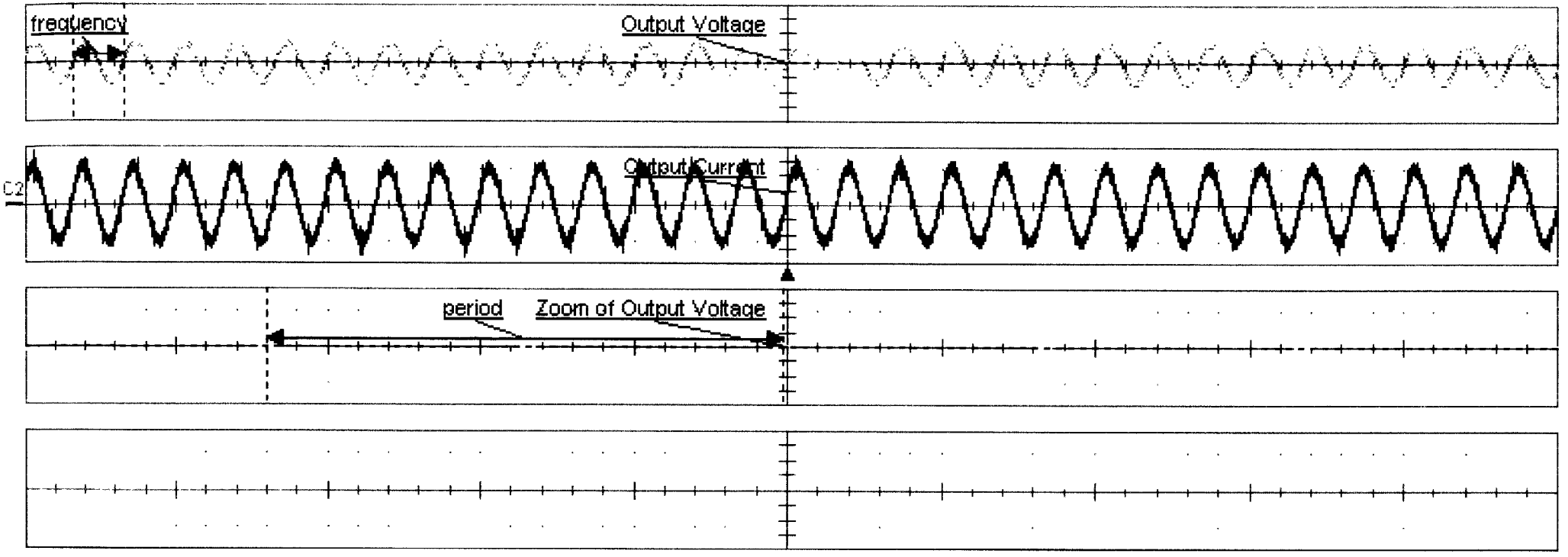
	P1	P2	P3	P4	P5	P6	11:25:42 22.3C	36%
	pkpk(C1)	rms(C1)	pkpk(C2)	rms(C2)	freq(C1)	period(F1)		
Value	3.005233	0.958602	0.036461	0.008941	59885.21	1.67E-05		
Mean	2.987986	0.958077	0.035475	0.008933	59844.94	1.67E-05		
Max	3.093622	0.959229	0.037786	0.008953	60771.8	1.69E-05		
Min	2.872649	0.922601	0.033809	0.008607	58875.48	1.65E-05		
Num	205	205	205	205	5740	410		
St Dev	0.031596	0.002576	0.000732	2.48E-05	184.2108	4.86E-08		

	P1	P2	P3	P4	P5	P6	11:26:06
	pkpk(C1)	rms(C1)	pkpk(C2)	rms(C2)	freq(C1)	period(F1)	
Value	5.347546	1.786433	0.03403	0.008755	59790.73	1.67E-05	
Mean	5.349496	1.784702	0.035417	0.008753	59841.3	1.67E-05	
Max	5.435936	1.786764	0.038007	0.008781	60386.47	1.68E-05	
Min	5.126573	1.712696	0.033588	0.008387	59339.18	1.66E-05	
Num	204	204	204	204	5712	408	
St Dev	0.037973	0.007489	0.00068	3.76E-05	75.83275	2.04E-08	

	P1	P2	P3	P4	P5	P6	11:26:29
	pkpk(C1)	rms(C1)	pkpk(C2)	rms(C2)	freq(C1)	period(F1)	
Value	5.568519	1.872946	0.029831	0.006223	59936.87	1.67E-05	
Mean	5.582084	1.871565	0.029013	0.006221	59847.7	1.67E-05	
Max	5.656908	1.873147	0.03182	0.006243	60176.22	1.68E-05	
Min	5.391741	1.79623	0.027401	0.005969	59488.4	1.67E-05	
Num	202	202	202	202	5656	404	
St Dev	0.028663	0.005909	0.000763	2.14E-05	69.01717	1.86E-08	

	P1	P2	P3	P4	P5	P6	11:26:53
	pkpk(C1)	rms(C1)	pkpk(C2)	rms(C2)	freq(C1)	period(F1)	
Value	6.62919	2.24213	0.028064	0.005616	59827.1	1.67E-05	

SPI 62021
SECTION 1 BATT AAMI SUMMARY XLS

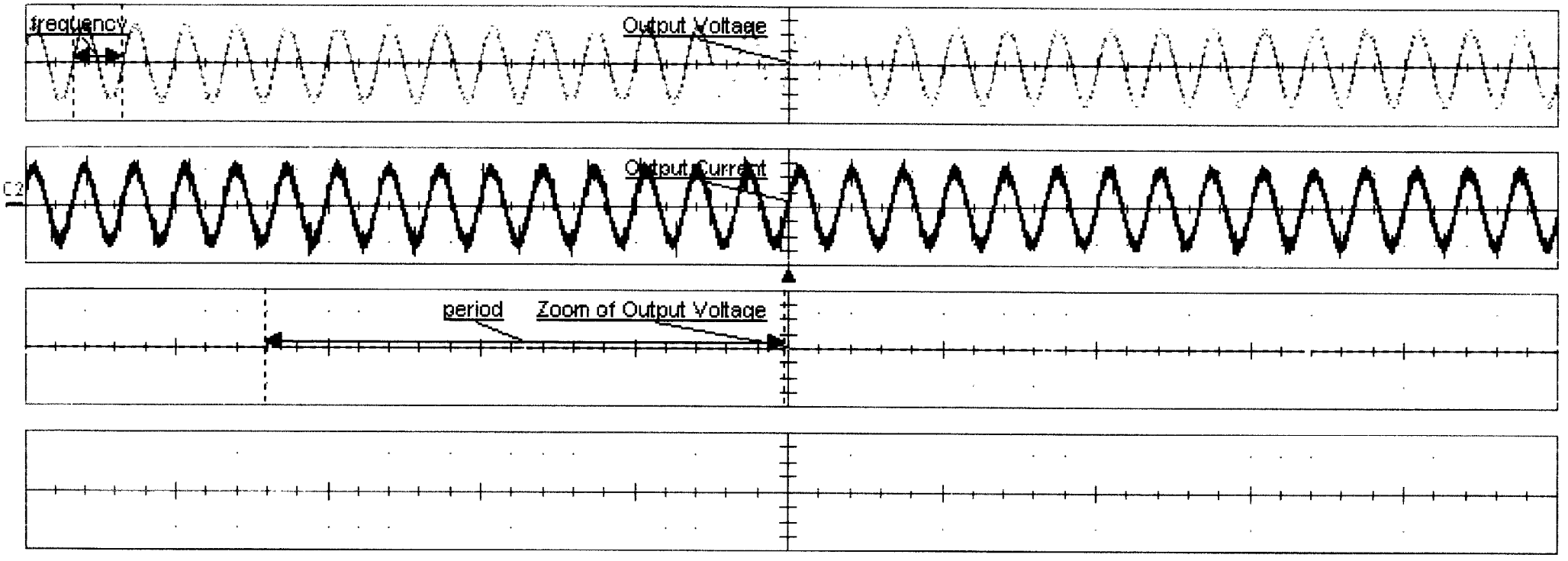


Measure	P1:pkpk(C1)	P2:rms(C1)	P3:pkpk(C2)	P4:rms(C2)	P5:freq(C1)	P6:period(F1)
value	3.01 V	959 mV	36.5 mV	8.94 mV	59.8735 kHz	16.73808 µs
mean	2.9880 V	958.08 mV	35.475 mV	8.9328 mV	59.845 kHz	16.7107236 µs
min	2.87 V	923 mV	33.8 mV	8.61 mV	58.9 kHz	16.54712 µs
max	3.09 V	959 mV	37.8 mV	8.95 mV	60.8 kHz	16.86471 µs
sdev	31.6 mV	2.58 mV	732 µV	24.8 µV	184 Hz	48.6049 ns
num	205	205	205	205	5.740e+3	410
status	✔	✔	✔	✔	⚠	✔
histo						

C1 1.00 V/div 0 mV offset | 5.00 mV/div 0.00 mV ofst | F1 zoom(C1) | Timebase 0 µs 50.0 µs/div 100 kS 200 MS/s | Trigger Stop 0.00 V Edge Positive

100
SPI62021

0202



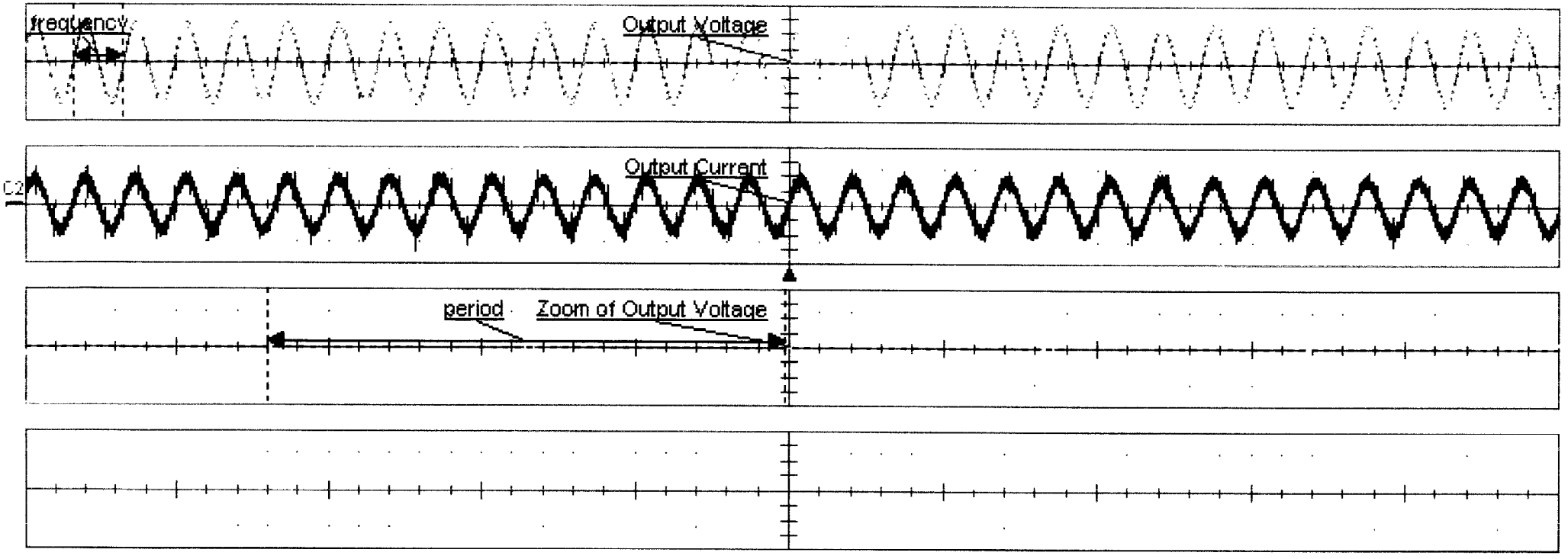
Measure	P1:pkpk(C1)	P2:rms(C1)	P3:pkpk(C2)	P4:rms(C2)	P5:freq(C1)	P6:period(F1)
value	5.35 V	1.786 V	34.0 mV	8.75 mV	59.7907 kHz	16.69018 µs
mean	5.3495 V	1.78470 V	35.417 mV	8.7525 mV	59.841 kHz	16.7110790 µs
min	5.13 V	1.713 V	33.6 mV	8.39 mV	59.3 kHz	16.63992 µs
max	5.44 V	1.787 V	38.0 mV	8.78 mV	60.4 kHz	16.78966 µs
sdev	38.0 mV	7.49 mV	680 µV	37.6 µV	76 Hz	20.3726 ns
num	204	204	204	204	5.712e+3	408
status	✔	✔	✔	✔	✔	✔

histo

C1		F1 zoom(C1)	Timebase 0 µs	Trigger
1.00 V/div	5.00 mV/div		50.0 µs/div	Stop 0.00 V
0 mV offset	0.00 mV ofst		100 kS 200 MS/s	Edge Positive

200

0203



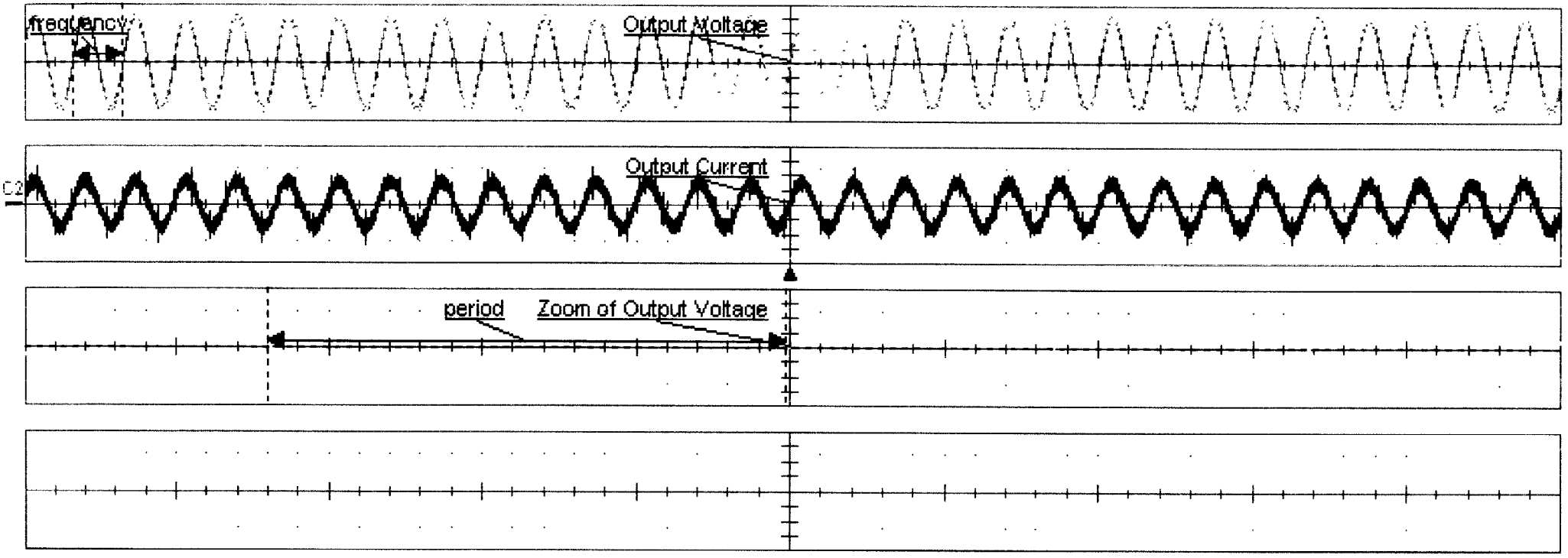
Measure	P1:pkpk(C1)	P2:rms(C1)	P3:pkpk(C2)	P4:rms(C2)	P5:freq(C1)	P6:period(F1)
value	5.57 V	1.873 V	29.8 mV	6.22 mV	59.9362 kHz	16.71987 µs
mean	5.5821 V	1.87157 V	29.013 mV	6.2207 mV	59.848 kHz	16.7097773 µs
min	5.39 V	1.796 V	27.4 mV	5.97 mV	59.5 kHz	16.65224 µs
max	5.66 V	1.873 V	31.8 mV	6.24 mV	60.2 kHz	16.77000 µs
sdev	28.7 mV	5.91 mV	763 µV	21.4 µV	69 Hz	18.6499 ns
num	202	202	202	202	5.656e+3	404
status	✔	✔	✔	✔	✔	✔

histo

C1		F1 zoom(C1)	Timebase 0 µs	Trigger
1.00 V/div	5.00 mV/div		50.0 µs/div	Stop 0.00 V
0 mV offset	0.00 mV ofst		100 kS 200 MS/s	Edge Positive

300

0204



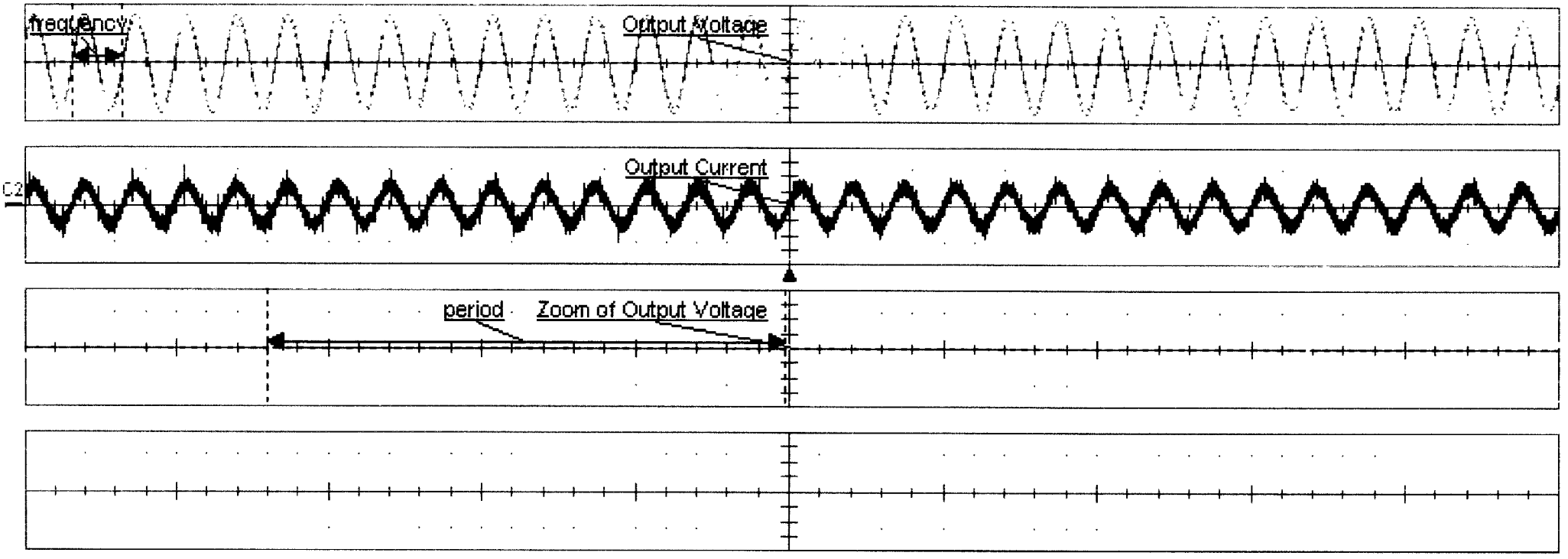
Measure	P1:pkpk(C1)	P2:rms(C1)	P3:pkpk(C2)	P4:rms(C2)	P5:freq(C1)	P6:period(F1)
value	6.63 V	2.242 V	28.1 mV	5.62 mV	59.8355 kHz	16.68340 µs
mean	6.6119 V	2.24241 V	27.623 mV	5.6272 mV	59.843 kHz	16.7108926 µs
min	6.36 V	2.153 V	25.6 mV	5.41 mV	59.5 kHz	16.66691 µs
max	6.67 V	2.244 V	31.2 mV	5.65 mV	60.1 kHz	16.75471 µs
sdev	31.6 mV	6.30 mV	775 µV	18.7 µV	56 Hz	15.4678 ns
num	205	205	205	205	5.740e+3	410
status	✔	✔	✔	✔	✔	✔

histo

C1		F1 zoom(C1)	Timebase 0 µs	Trigger
1.00 V/div	5.00 mV/div		50.0 µs/div	Stop 0.00 V
0 mV offset	0.00 mV ofst		100 kS 200 MS/s	Edge Positive

400

0205



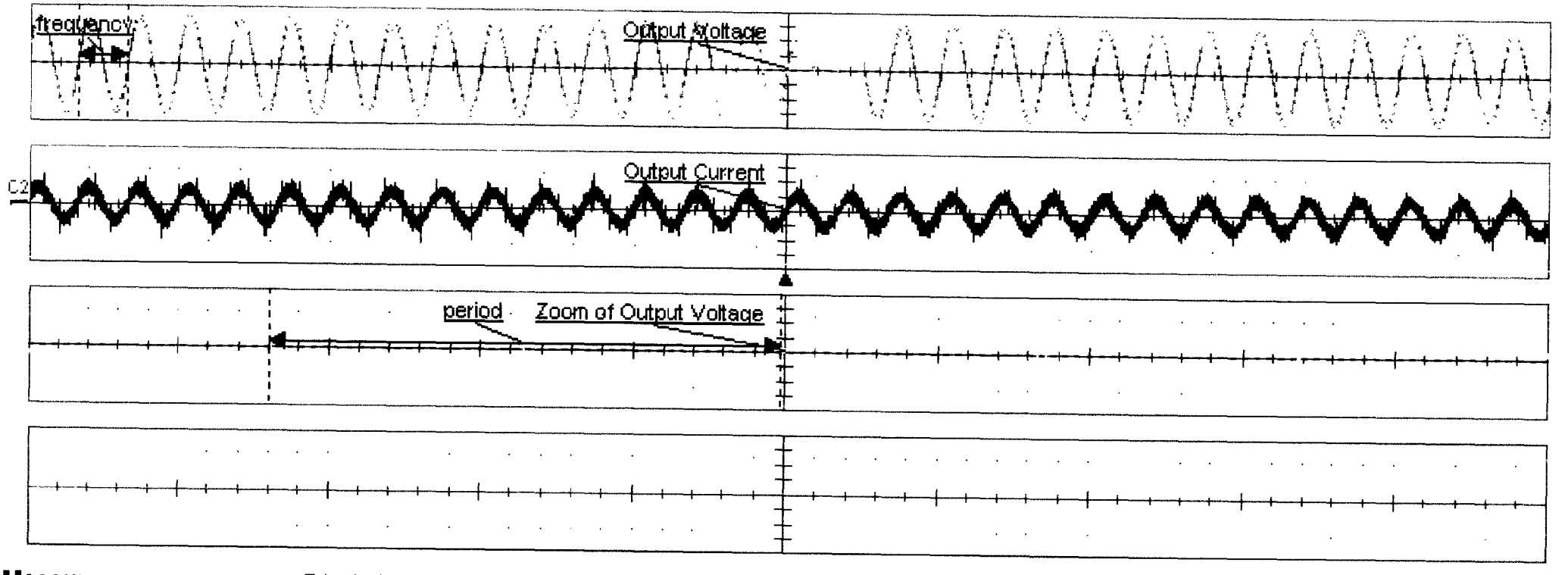
Measure	P1:pkpk(C1)	P2:rms(C1)	P3:pkpk(C2)	P4:rms(C2)	P5:freq(C1)	P6:period(F1)
value	6.67 V	2.275 V	25.9 mV	4.64 mV	59.8101 kHz	16.70458 µs
mean	6.6984 V	2.27478 V	24.910 mV	4.6334 mV	59.843 kHz	16.7112133 µs
min	6.63 V	2.260 V	23.0 mV	4.59 mV	59.6 kHz	16.66127 µs
max	6.76 V	2.276 V	26.7 mV	4.66 mV	60.1 kHz	16.75010 µs
sdev	25.9 mV	1.22 mV	742 µV	12.0 µV	54 Hz	15.2356 ns
num	203	203	203	203	5.684e+3	406
status	✔	✔	✔	✔	✔	✔

histo

C1		F1 zoom(C1)	Timebase 0 µs	Trigger
1.00 V/div	5.00 mV/div		50.0 µs/div	Stop 0.00 V
0 mV offset	0.00 mV ofst		100 kS 200 MS/s	Edge Positive

500

0206



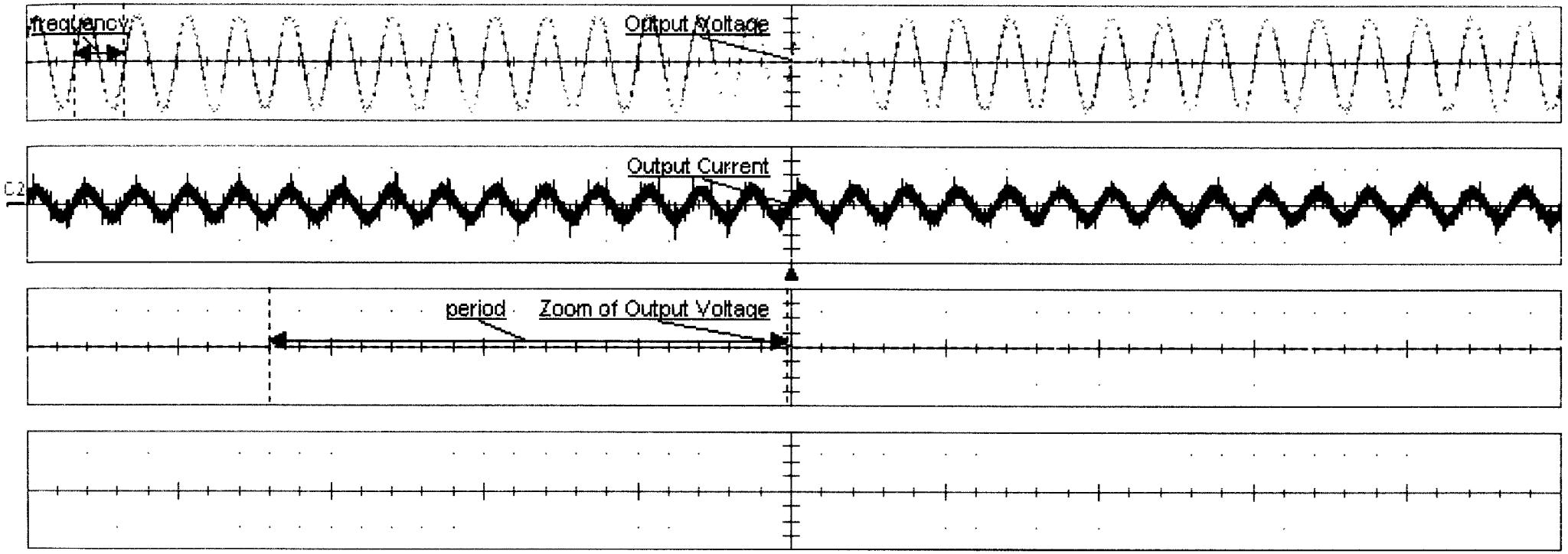
Measure	P1:pkpk(C1)	P2:rms(C1)	P3:pkpk(C2)	P4:rms(C2)	P5:freq(C1)	P6:period(F1)
value	6.72 V	2.300 V	23.6 mV	3.89 mV	59.7799 kHz	16.69934 µs
mean	6.7494 V	2.29942 V	22.850 mV	3.8750 mV	59.843 kHz	16.7108458 µs
min	6.54 V	2.209 V	21.0 mV	3.73 mV	59.6 kHz	16.64354 µs
max	6.85 V	2.301 V	25.6 mV	3.90 mV	60.1 kHz	16.76332 µs
sdev	35.4 mV	7.25 mV	743 µV	17.2 µV	53 Hz	14.3602 ns
num	204	204	204	204	5.712e+3	408
status	✔	✔	✔	✔	✔	✔

histo

C1 1.00 V/div 0 mV offset | 5.00 mV/div 0.00 mV ofst | F1 zoom(C1) | Timebase 0 µs 50.0 µs/div 100 kS 200 MS/s | Trigger C1 Stop 0.00 V Edge Positive

600

0207



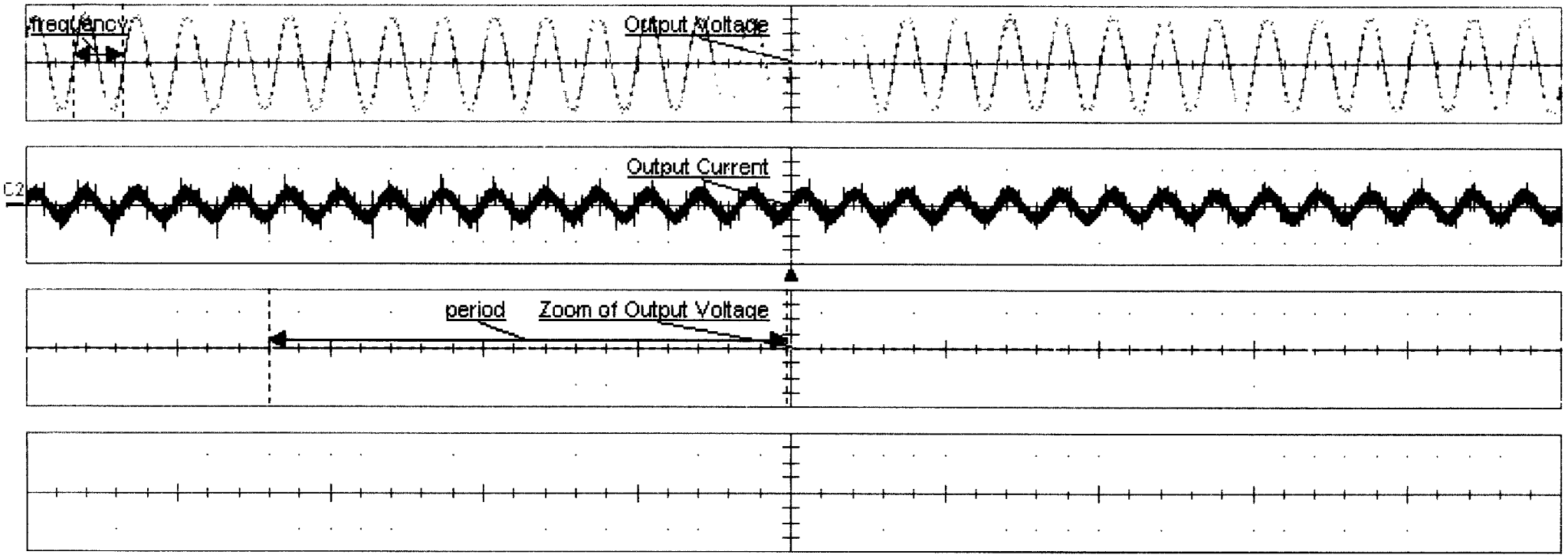
Measure	P1:pkpk(C1)	P2:rms(C1)	P3:pkpk(C2)	P4:rms(C2)	P5:freq(C1)	P6:period(F1)
value	6.76 V	2.316 V	22.1 mV	3.42 mV	59.8588 kHz	16.70736 µs
mean	6.7174 V	2.28352 V	21.562 mV	3.3694 mV	59.872 kHz	16.7038250 µs
min	6.58 V	2.248 V	19.7 mV	3.28 mV	59.7 kHz	16.65070 µs
max	6.85 V	2.317 V	24.3 mV	3.45 mV	60.1 kHz	16.75464 µs
sdev	90.1 mV	33.27 mV	871 µV	50.8 µV	63 Hz	16.5686 ns
num	201	201	201	201	5.628e+3	402
status	✔	✔	✔	✔	✔	✔

histo

C1		F1 zoom(C1)	Timebase 0 µs	Trigger
1.00 V/div	5.00 mV/div		50.0 µs/div	Stop 0.00 V
0 mV offset	0.00 mV ofst		100 kS 200 MS/s	Edge Positive

700

0208

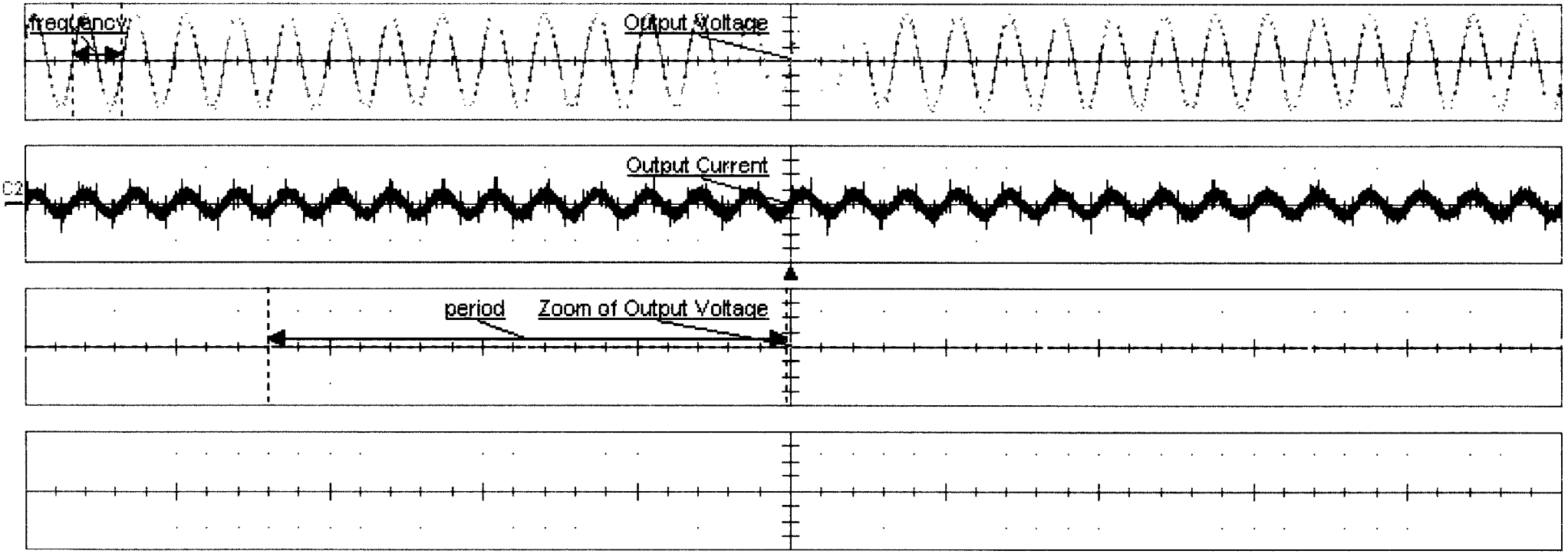


Measure	P1:pkpk(C1)	P2:rms(C1)	P3:pkpk(C2)	P4:rms(C2)	P5:freq(C1)	P6:period(F1)
value	6.85 V	2.330 V	21.2 mV	3.03 mV	59.8575 kHz	16.69589 µs
mean	6.6788 V	2.26962 V	20.471 mV	2.9533 mV	59.873 kHz	16.7027606 µs
min	2.08 V	611 mV	15.9 mV	1.22 mV	59.2 kHz	16.64229 µs
max	6.89 V	2.330 V	22.5 mV	3.06 mV	60.4 kHz	16.77500 µs
sdev	372.9 mV	135.06 mV	840 µV	146.7 µV	67 Hz	17.8026 ns
num	203	203	203	203	5.684e+3	406
status	✔	✔	✔	✔	✔	✔
histo						

C1		F1 zoom(C1)	Timebase 0 µs	Trigger
1.00 V/div	5.00 mV/div		50.0 µs/div	Stop 0.00 V
0 mV offset	0.00 mV ofst		100 kS 200 MS/s	Edge Positive

800

0209

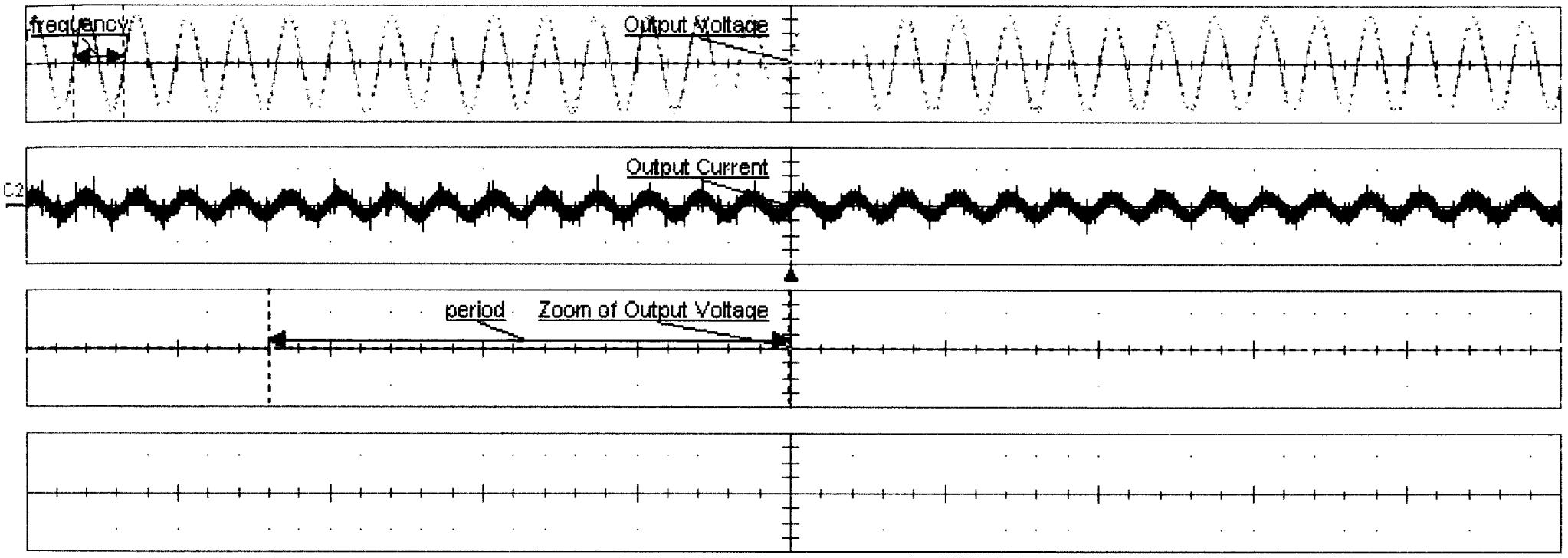


Measure	P1:pkpk(C1)	P2:rms(C1)	P3:pkpk(C2)	P4:rms(C2)	P5:freq(C1)	P6:period(F1)
value	6.63 V	2.265 V	19.0 mV	2.62 mV	59.8027 kHz	16.73194 µs
mean	6.5708 V	2.22699 V	19.610 mV	2.6066 mV	59.873 kHz	16.7030795 µs
min	2.08 V	615 mV	14.8 mV	1.17 mV	58.9 kHz	16.65284 µs
max	6.81 V	2.319 V	22.8 mV	2.70 mV	61.0 kHz	16.88000 µs
sdev	327.6 mV	118.18 mV	875 µV	107.9 µV	72 Hz	19.6931 ns
num	203	203	203	203	5.684e+3	406
status	✔	✔	✔	✔	✔	✔
histo						

C1		F1 zoom(C1)	Timebase 0 µs	Trigger C1
1.00 V/div	5.00 mV/div		50.0 µs/div	Stop 0.00 V
0 mV offset	0.00 mV ofst		100 kS 200 MS/s	Edge Positive

YCC

0210



Measure	P1:pkpk(C1)	P2:rms(C1)	P3:pkpk(C2)	P4:rms(C2)	P5:freq(C1)	P6:period(F1)
value	6.63 V	2.272 V	19.0 mV	2.45 mV	59.9208 kHz	16.69172 µs
mean	6.6065 V	2.23890 V	19.130 mV	2.4253 mV	59.872 kHz	16.7020980 µs
min	6.45 V	2.205 V	17.0 mV	2.34 mV	59.6 kHz	16.63724 µs
max	6.76 V	2.273 V	21.7 mV	2.49 mV	60.2 kHz	16.75074 µs
sdev	86.8 mV	32.90 mV	831 µV	34.8 µV	65 Hz	18.1390 ns
num	208	208	208	208	5.824e+3	416
status	✔	✔	✔	✔	✔	✔
histo						

C1		F1 zoom(C1)	Timebase 0 µs	Trigger C1
1.00 V/div	5.00 mV/div		50.0 µs/div	Stop 0.00 V
0 mV offset	0.00 mV ofst		100 kS 200 MS/s	Edge Positive

1000

0211

	P1	P2	P3	P4	P5	P6	8:26:54 21.9C	34%
	pkpk(C1)	rms(C1)	pkpk(C2)	rms(C2)	freq(C1)	period(F1)		
Value	3.182011	1.023963	0.035356	0.009528	59510.72	1.69E-05		
Mean	3.193506	1.022742	0.035556	0.009499	59108.35	1.69E-05		
Max	3.314595	1.024292	0.037786	0.009528	60186.58	1.71E-05		
Min	3.049427	0.980147	0.033809	0.009092	58139.53	1.67E-05		
Num	223	223	223	223	6244	446		
St Dev	0.027906	0.005019	0.000791	4.85E-05	228.4699	6.36E-08		

	P1	P2	P3	P4	P5	P6	8:27:22
	pkpk(C1)	rms(C1)	pkpk(C2)	rms(C2)	freq(C1)	period(F1)	
Value	3.623957	1.192432	0.025854	0.005882	59363.84	1.69E-05	
Mean	3.679731	1.191653	0.026037	0.005873	59125.39	1.69E-05	
Max	3.756541	1.192512	0.028506	0.005895	59961.06	1.71E-05	
Min	3.535568	1.141167	0.024307	0.005631	58282.37	1.67E-05	
Num	229	229	229	229	6412	458	
St Dev	0.032558	0.003389	0.000847	1.8E-05	178.6403	5.11E-08	

	P1	P2	P3	P4	P5	P6	8:27:48
	pkpk(C1)	rms(C1)	pkpk(C2)	rms(C2)	freq(C1)	period(F1)	
Value	6.761773	2.286551	0.031157	0.007547	59154.98	1.69E-05	
Mean	6.74525	2.285067	0.030387	0.007556	59113.71	1.69E-05	
Max	6.850163	2.286758	0.033146	0.007579	59308.88	1.7E-05	
Min	6.452411	2.190306	0.028506	0.007244	58936.64	1.69E-05	
Num	222	222	222	222	6216	444	
St Dev	0.040231	0.009127	0.000768	3.09E-05	45.12645	1.3E-08	

	P1	P2	P3	P4	P5	P6	8:28:30
	pkpk(C1)	rms(C1)	pkpk(C2)	rms(C2)	freq(C1)	period(F1)	
Value	6.673384	2.247095	0.025412	0.005624	59062.95	1.69E-05	

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Mean	6.63112	2.245415	0.025146	0.005616	59123.14	1.69E-05
Max	6.717579	2.247182	0.027843	0.005645	59305.77	1.7E-05
Min	6.364022	2.151837	0.023202	0.005395	58951.32	1.69E-05
Num	206	206	206	206	5768	412
St Dev	0.039506	0.009376	0.000795	2.33E-05	46.36435	1.3E-08

	P1	P2	P3	P4	P5	P6	8:29:01
	pkpk(C1)	rms(C1)	pkpk(C2)	rms(C2)	freq(C1)	period(F1)	
Value	6.761773	2.290214	0.023423	0.004646	59064.24	1.69E-05	
Mean	6.763703	2.289685	0.022781	0.004649	59124.8	1.69E-05	
Max	6.850163	2.291289	0.026075	0.004693	59349.82	1.7E-05	
Min	6.496606	2.194977	0.020992	0.004466	58771.67	1.69E-05	
Num	229	229	229	229	6412	458	
St Dev	0.032725	0.007317	0.000852	1.86E-05	53.57662	1.42E-08	

	P1	P2	P3	P4	P5	P6	8:29:27
	pkpk(C1)	rms(C1)	pkpk(C2)	rms(C2)	freq(C1)	period(F1)	
Value	6.850163	2.325456	0.02055	0.003902	59030.15	1.69E-05	
Mean	6.859089	2.324678	0.020663	0.003896	59125.37	1.69E-05	
Max	6.938552	2.326054	0.022981	0.003938	59373.9	1.7E-05	
Min	6.584995	2.22816	0.018562	0.003762	58859.62	1.68E-05	
Num	203	203	203	203	5684	406	
St Dev	0.029217	0.007007	0.000754	1.61E-05	61.17098	1.74E-08	

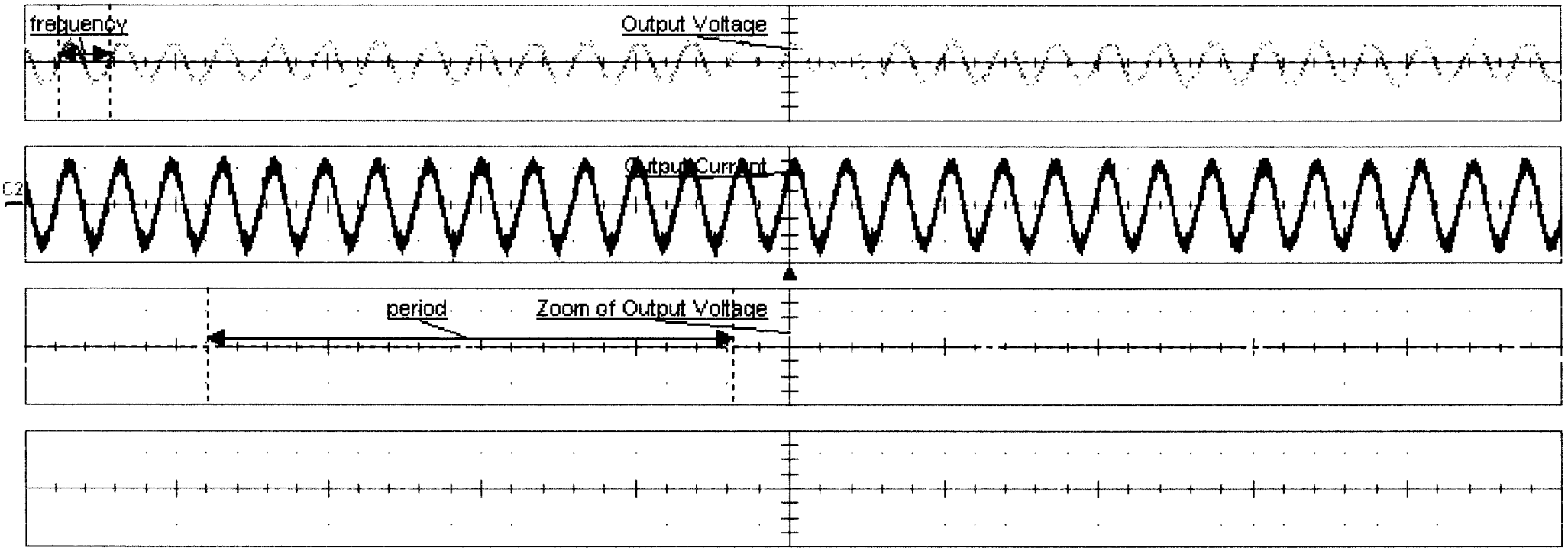
	P1	P2	P3	P4	P5	P6	8:29:53
	pkpk(C1)	rms(C1)	pkpk(C2)	rms(C2)	freq(C1)	period(F1)	
Value	6.894357	2.347322	0.018562	0.00344	59218.57	1.69E-05	
Mean	6.881449	2.333936	0.019471	0.003431	59137.06	1.69E-05	
Max	6.982746	2.347475	0.022097	0.003486	59402.86	1.7E-05	
Min	6.62919	2.24931	0.017457	0.003302	58837.68	1.68E-05	

Num	202	202	202	202	5656	404
St Dev	0.07791	0.027532	0.000821	4.09E-05	68.64644	1.98E-08

	P1	P2	P3	P4	P5	P6	8:30:19
	pkpk(C1)	rms(C1)	pkpk(C2)	rms(C2)	freq(C1)	period(F1)	
Value	6.5408	2.227482	0.017236	0.002866	59281.76	1.69E-05	
Mean	6.780259	2.295546	0.018585	0.002981	59161.69	1.69E-05	
Max	7.026941	2.366773	0.02276	0.003101	59535.72	1.7E-05	
Min	4.9056	1.602821	0.016573	0.002176	58788.95	1.68E-05	
Num	208	208	208	208	5824	416	
St Dev	0.186211	0.068237	0.000848	8.47E-05	72.90931	1.96E-08	

	P1	P2	P3	P4	P5	P6	8:30:52
	pkpk(C1)	rms(C1)	pkpk(C2)	rms(C2)	freq(C1)	period(F1)	
Value	6.850163	2.311895	0.018341	0.002675	59191.08	1.69E-05	
Mean	6.73491	2.275244	0.017523	0.002639	59162.83	1.69E-05	
Max	6.894357	2.312513	0.02055	0.002723	59495.34	1.7E-05	
Min	6.584995	2.234713	0.015689	0.002574	58852.54	1.68E-05	
Num	204	204	204	204	5712	408	
St Dev	0.109949	0.034307	0.00074	3.9E-05	75.82824	2.24E-08	

	P1	P2	P3	P4	P5	P6	8:31:33
	pkpk(C1)	rms(C1)	pkpk(C2)	rms(C2)	freq(C1)	period(F1)	
Value	6.850163	2.323048	0.017457	0.002514	59166.36	1.69E-05	
Mean	6.756815	2.285597	0.01699	0.002449	59164.64	1.69E-05	
Max	6.894357	2.323471	0.019446	0.002532	59429.66	1.7E-05	
Min	6.584995	2.24546	0.015468	0.002365	58801.23	1.68E-05	
Num	205	205	205	205	5740	410	
St Dev	0.102486	0.034537	0.000792	3.88E-05	75.28053	2.21E-08	



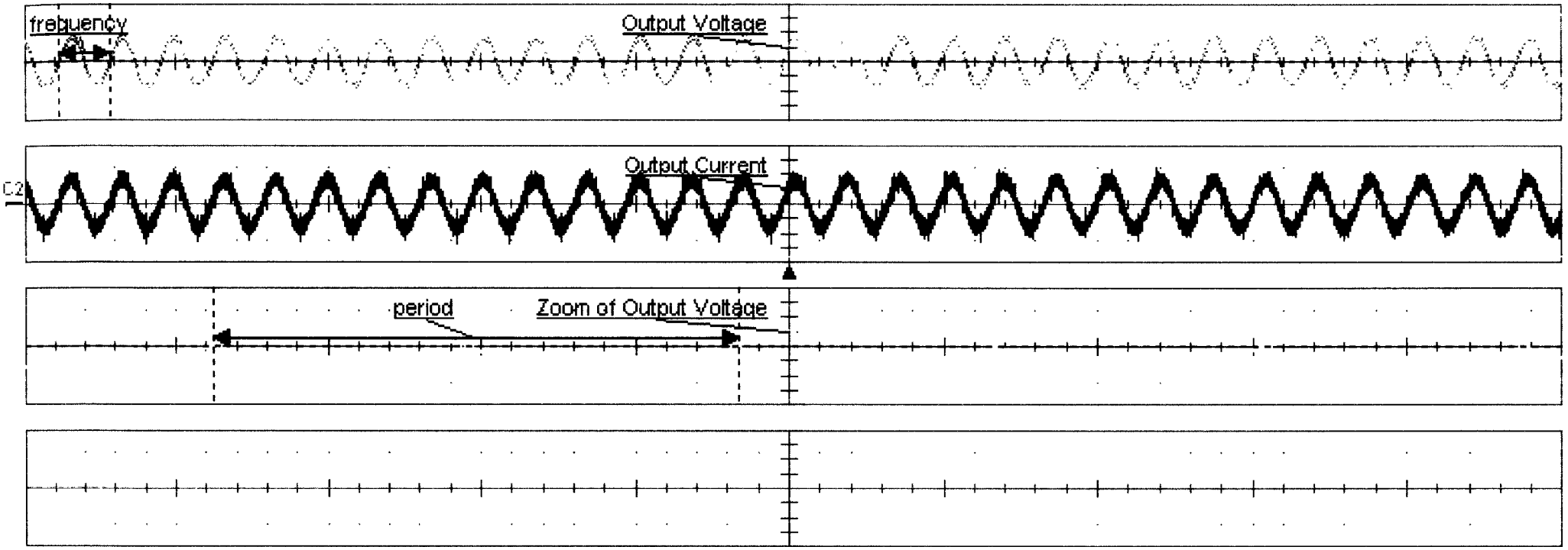
Measure	P1:pkpk(C1)	P2:rms(C1)	P3:pkpk(C2)	P4:rms(C2)	P5:freq(C1)	P6:period(F1)
value	3.18 V	1.024 V	35.4 mV	9.53 mV	59.4940 kHz	16.88381 µs
mean	3.1935 V	1.02274 V	35.556 mV	9.4989 mV	59.1 kHz	16.9152426 µs
min	3.05 V	980 mV	33.8 mV	9.09 mV	58 kHz	16.73766 µs
max	3.31 V	1.024 V	37.8 mV	9.53 mV	60 kHz	17.12527 µs
sdev	27.9 mV	5.02 mV	791 µV	48.5 µV	228 Hz	63.5871 ns
num	223	223	223	223	6.244e+3	446
status	✔	✔	✔	✔	⚠	✔
histo						

C1		F1 zoom(C1)	Timebase 0 µs	Trigger C1
1.00 V/div	5.00 mV/div		50.0 µs/div	Stop 890 mV
0 mV offset	0.00 mV ofst		100 kS 200 MS/s	Edge Positive

100

SY A65120

015

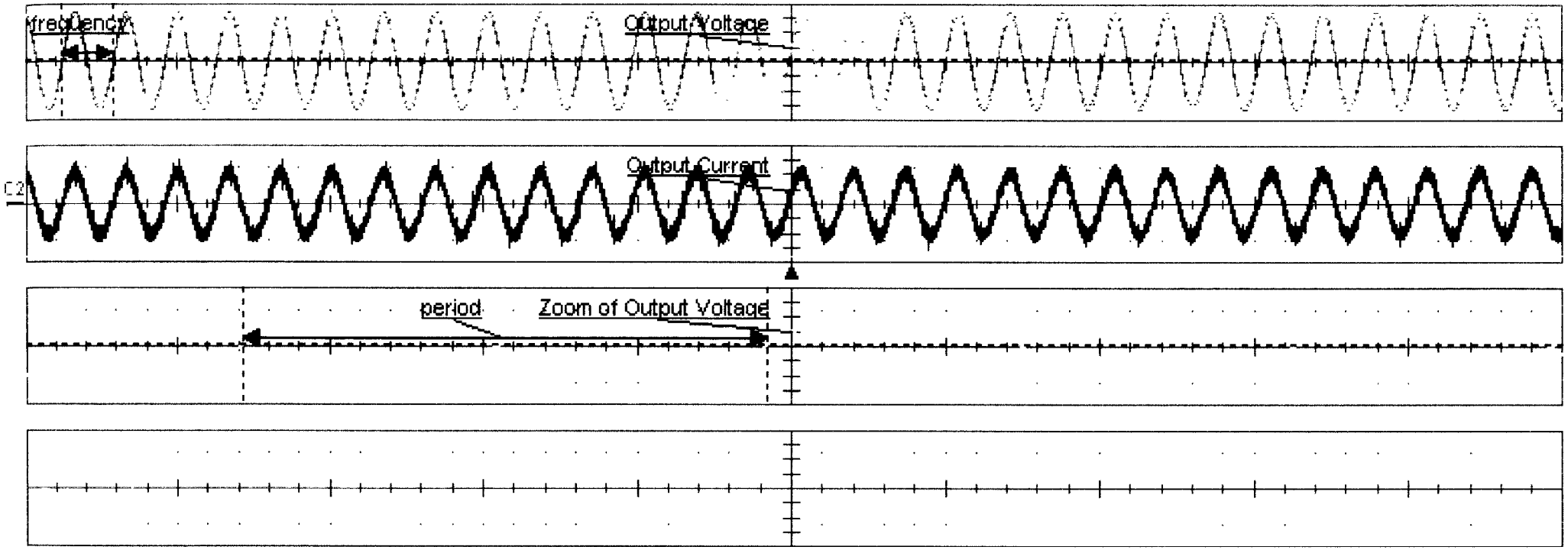


Measure	P1:pkpk(C1)	P2:rms(C1)	P3:pkpk(C2)	P4:rms(C2)	P5:freq(C1)	P6:period(F1)
value	3.62 V	1.192 V	25.9 mV	5.88 mV	59.3430 kHz	16.89409 µs
mean	3.6797 V	1.19165 V	26.037 mV	5.8726 mV	59.1 kHz	16.9131456 µs
min	3.54 V	1.141 V	24.3 mV	5.63 mV	58 kHz	16.72033 µs
max	3.76 V	1.193 V	28.5 mV	5.90 mV	60 kHz	17.08129 µs
sdev	32.6 mV	3.39 mV	847 µV	18.0 µV	179 Hz	51.1036 ns
num	229	229	229	229	6.412e+3	458
status	✔	✔	✔	✔	⚠	✔
histo						

C1		F1 zoom(C1)	Timebase 0 µs	Trigger C1
1.00 V/div	5.00 mV/div		50.0 µs/div	Stop 890 mV
0 mV offset	0.00 mV ofst		100 kS 200 MS/s	Edge Positive

200

0216

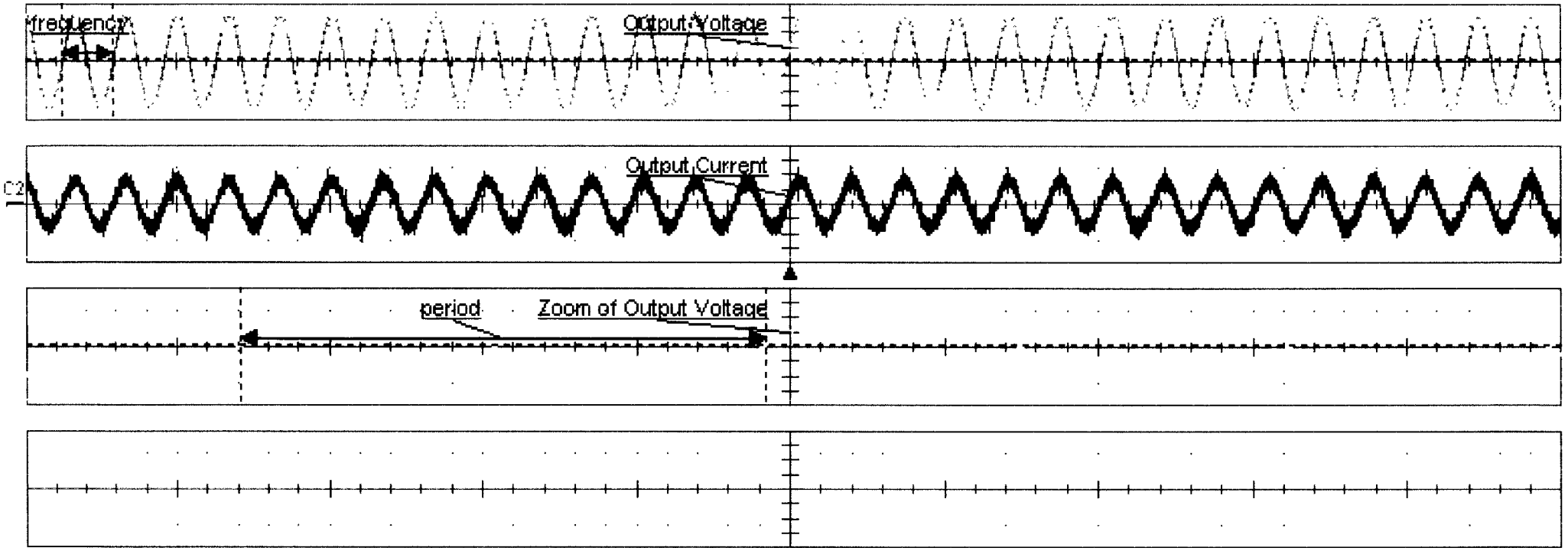


Measure	P1:pkpk(C1)	P2:rms(C1)	P3:pkpk(C2)	P4:rms(C2)	P5:freq(C1)	P6:period(F1)
value	6.76 V	2.287 V	31.2 mV	7.55 mV	59.1520 kHz	16.90944 µs
mean	6.7453 V	2.28507 V	30.387 mV	7.5559 mV	59.1 kHz	16.9165967 µs
min	6.45 V	2.190 V	28.5 mV	7.24 mV	59 kHz	16.87919 µs
max	6.85 V	2.287 V	33.1 mV	7.58 mV	59 kHz	16.95879 µs
sdev	40.2 mV	9.13 mV	768 µV	30.9 µV	45 Hz	13.0484 ns
num	222	222	222	222	6.216e+3	444
status	✔	✔	✔	✔	✔	✔
histo						

C1		F1 zoom(C1)	Timebase 0 µs	Trigger C1
1.00 V/div	5.00 mV/div		50.0 µs/div	Stop 890 mV
0 mV offset	0.00 mV ofst		100 kS 200 MS/s	Edge Positive

300

0217

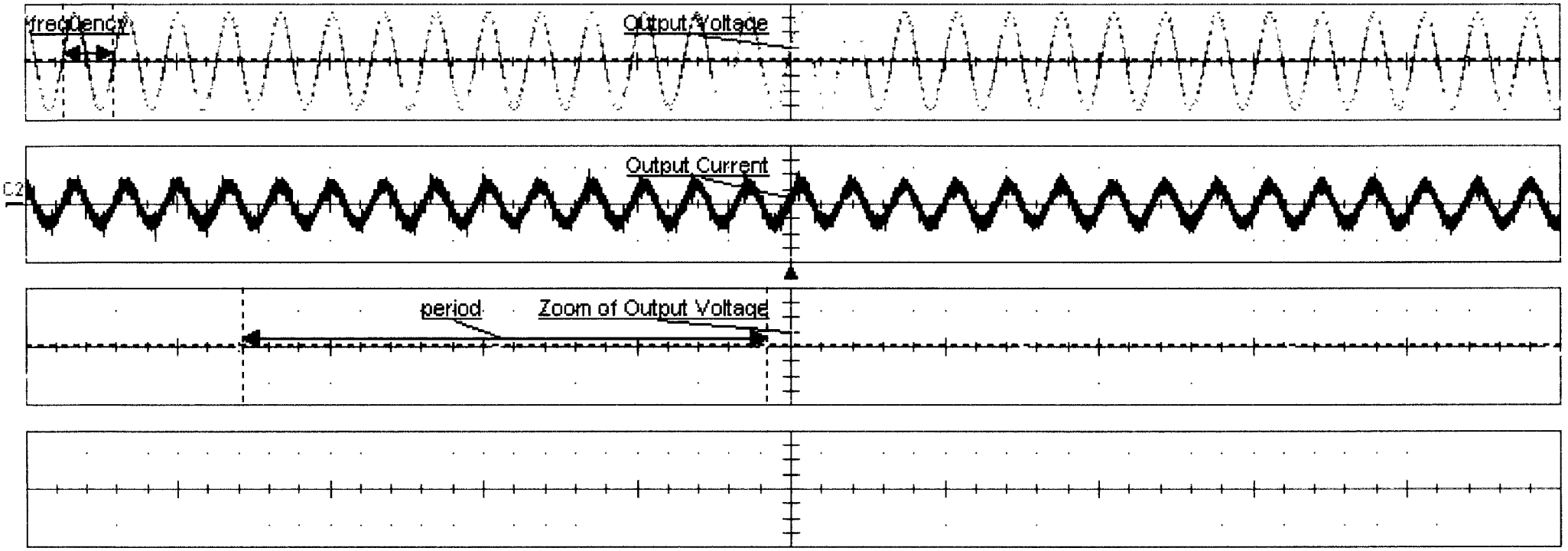


Measure	P1:pkpk(C1)	P2:rms(C1)	P3:pkpk(C2)	P4:rms(C2)	P5:freq(C1)	P6:period(F1)
value	6.67 V	2.247 V	25.4 mV	5.62 mV	59.0630 kHz	16.91951 µs
mean	6.6311 V	2.24542 V	25.146 mV	5.6161 mV	59.1 kHz	16.9141235 µs
min	6.36 V	2.152 V	23.2 mV	5.40 mV	59 kHz	16.86786 µs
max	6.72 V	2.247 V	27.8 mV	5.65 mV	59 kHz	16.95002 µs
sdev	39.5 mV	9.38 mV	795 µV	23.3 µV	46 Hz	12.9981 ns
num	206	206	206	206	5.768e+3	412
status	✔	✔	✔	✔	✔	✔
histo						

C1		F1 zoom(C1)	Timebase 0 µs	Trigger C1
1.00 V/div	5.00 mV/div		50.0 µs/div	Stop 890 mV
0 mV offset	0.00 mV ofst		100 kS 200 MS/s	Edge Positive

400

0218

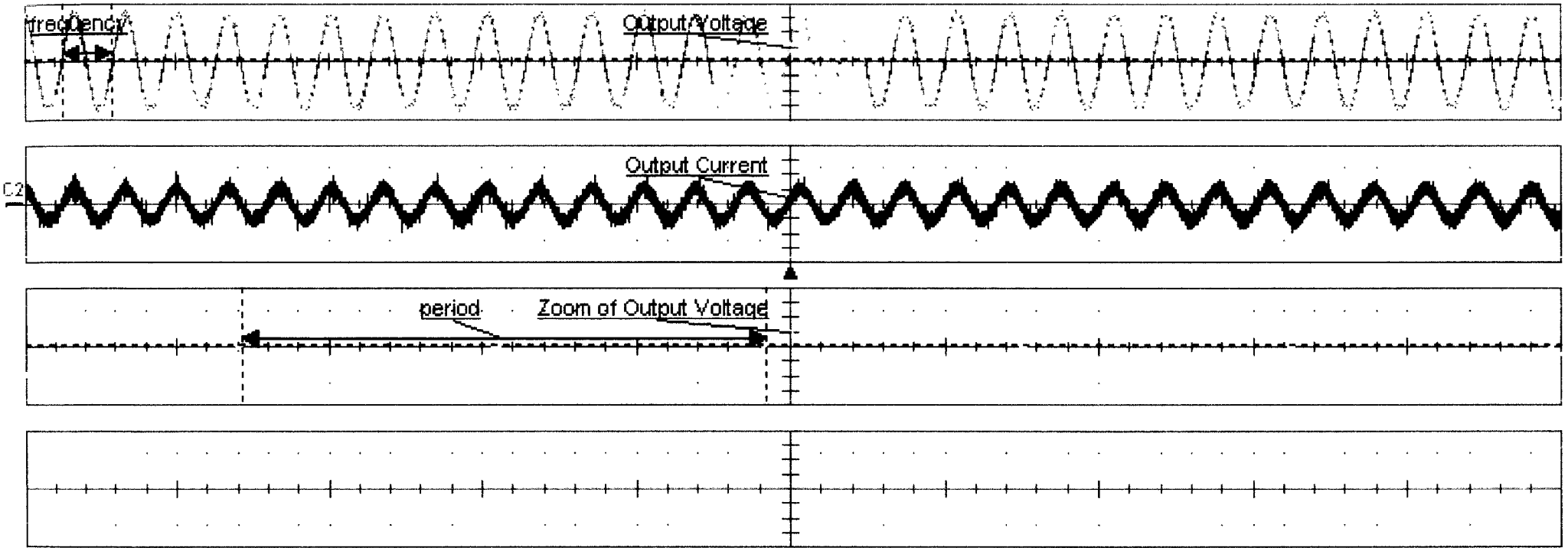


Measure	P1:pkpk(C1)	P2:rms(C1)	P3:pkpk(C2)	P4:rms(C2)	P5:freq(C1)	P6:period(F1)
value	6.76 V	2.290 V	23.4 mV	4.65 mV	59.0626 kHz	16.91398 µs
mean	6.7637 V	2.28968 V	22.781 mV	4.6494 mV	59.1 kHz	16.9131866 µs
min	6.50 V	2.195 V	21.0 mV	4.47 mV	59 kHz	16.86509 µs
max	6.85 V	2.291 V	26.1 mV	4.69 mV	59 kHz	16.95415 µs
sdev	32.7 mV	7.32 mV	852 µV	18.6 µV	54 Hz	14.2455 ns
num	229	229	229	229	6.412e+3	458
status	✔	✔	✔	✔	✔	✔
histo						

C1		F1 zoom(C1)	Timebase 0 µs	Trigger
1.00 V/div	5.00 mV/div		50.0 µs/div	Stop 890 mV
0 mV offset	0.00 mV ofst		100 kS 200 MS/s	Edge Positive

500

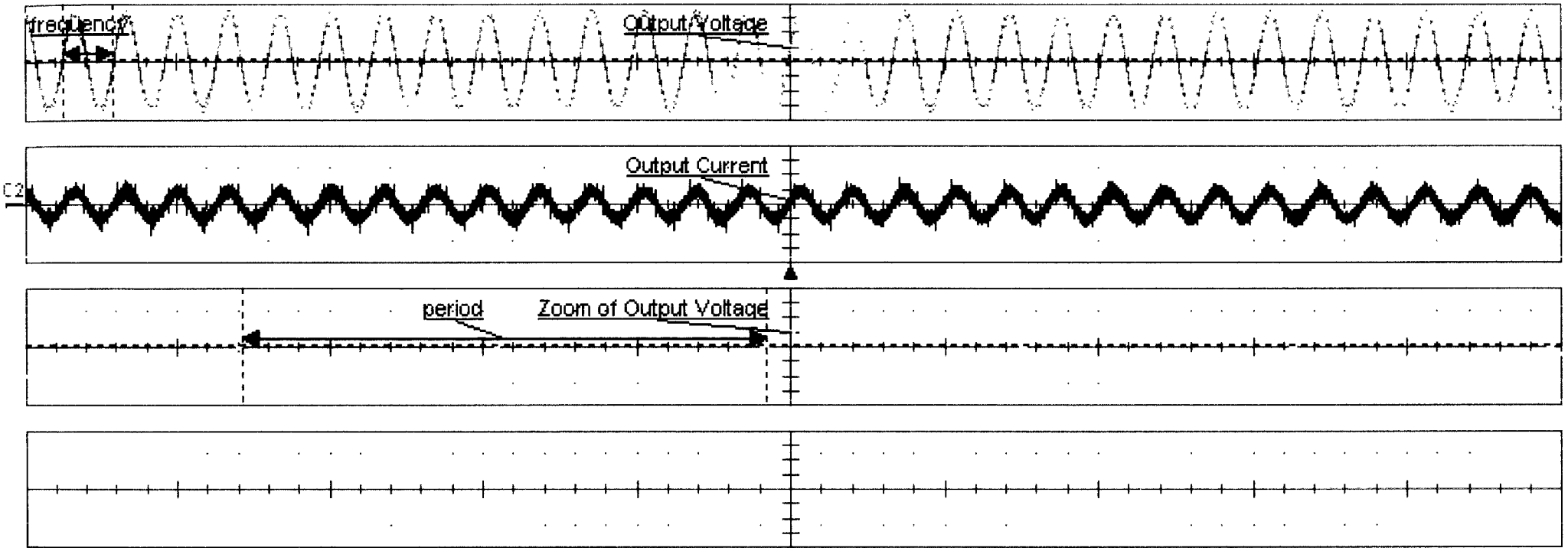
0219



Measure	P1:pkpk(C1)	P2:rms(C1)	P3:pkpk(C2)	P4:rms(C2)	P5:freq(C1)	P6:period(F1)
value	6.85 V	2.325 V	20.6 mV	3.90 mV	59.0143 kHz	16.94301 µs
mean	6.8591 V	2.32468 V	20.663 mV	3.8959 mV	59.1 kHz	16.9126093 µs
min	6.58 V	2.228 V	18.6 mV	3.76 mV	59 kHz	16.84081 µs
max	6.94 V	2.326 V	23.0 mV	3.94 mV	59 kHz	16.97513 µs
sdev	29.2 mV	7.01 mV	754 µV	16.1 µV	61 Hz	17.3795 ns
num	203	203	203	203	5.684e+3	406
status	✔	✔	✔	✔	✔	✔
histo						

C1		F1 zoom(C1)	Timebase 0 µs	Trigger C1
1.00 V/div	5.00 mV/div		50.0 µs/div	Stop 890 mV
0 mV offset	0.00 mV ofst		100 kS 200 MS/s	Edge Positive

0220

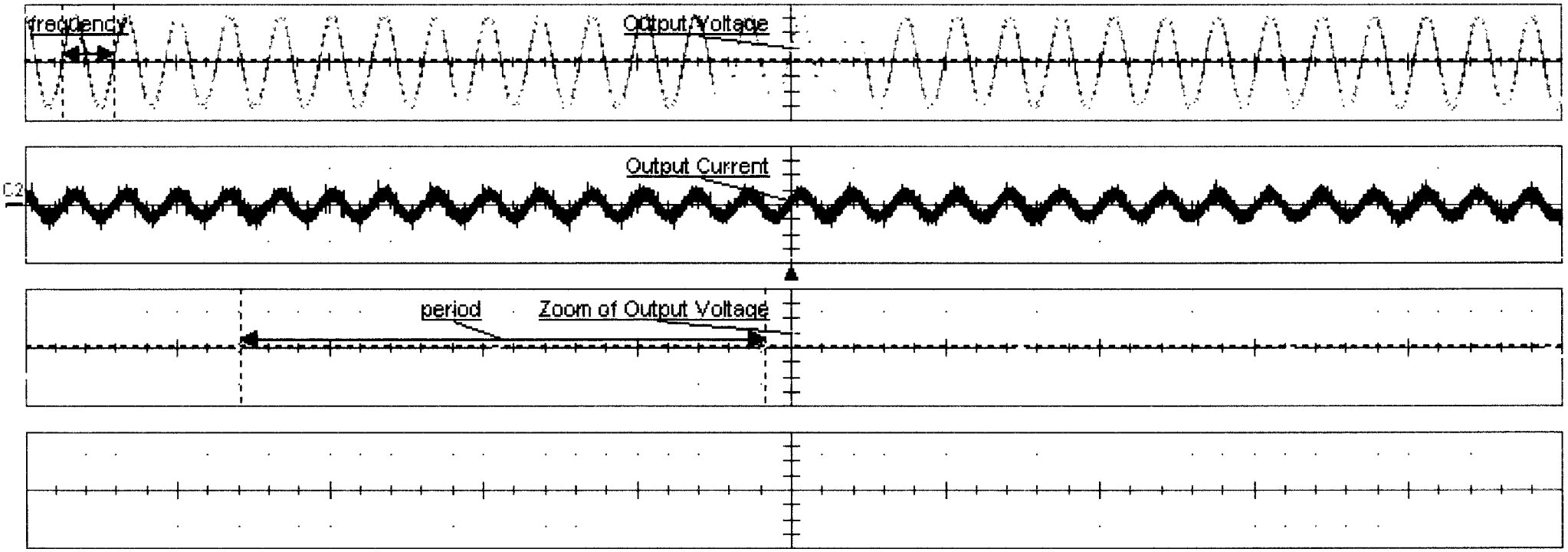


Measure	P1:pkpk(C1)	P2:rms(C1)	P3:pkpk(C2)	P4:rms(C2)	P5:freq(C1)	P6:period(F1)
value	6.89 V	2.347 V	18.6 mV	3.44 mV	59.2169 kHz	16.91972 µs
mean	6.8814 V	2.33394 V	19.471 mV	3.4311 mV	59.1 kHz	16.9103811 µs
min	6.63 V	2.249 V	17.5 mV	3.30 mV	59 kHz	16.84850 µs
max	6.98 V	2.347 V	22.1 mV	3.49 mV	59 kHz	16.97532 µs
sdev	77.9 mV	27.53 mV	821 µV	40.9 µV	69 Hz	19.8016 ns
num	202	202	202	202	5.656e+3	404
status	✔	✔	✔	✔	✔	✔
histo						

C1		F1 zoom(C1)	Timebase 0 µs	Trigger C1
1.00 V/div	5.00 mV/div		50.0 µs/div	Stop 890 mV
0 mV offset	0.00 mV ofst		100 kS 200 MS/s	Edge Positive

700

0221

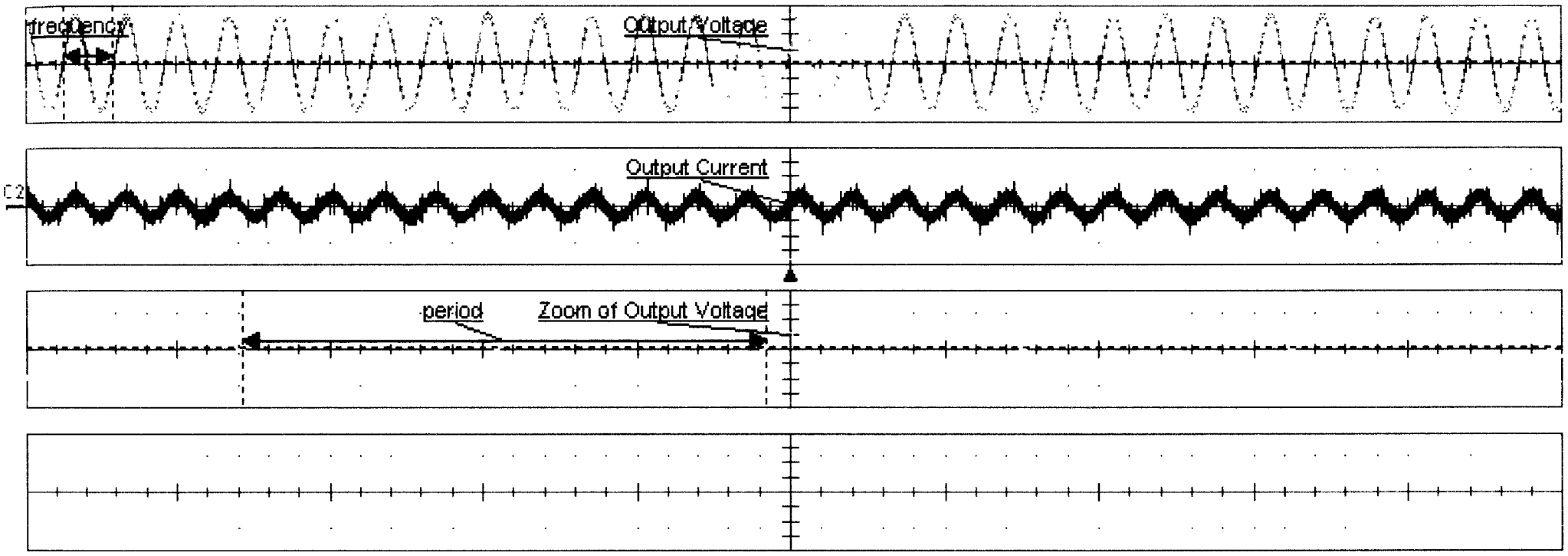


Measure	P1:pkpk(C1)	P2:rms(C1)	P3:pkpk(C2)	P4:rms(C2)	P5:freq(C1)	P6:period(F1)
value	6.54 V	2.227 V	17.2 mV	2.87 mV	59.2853 kHz	16.91642 µs
mean	6.7803 V	2.29555 V	18.585 mV	2.9809 mV	59.2 kHz	16.9031283 µs
min	4.91 V	1.603 V	16.6 mV	2.18 mV	59 kHz	16.83377 µs
max	7.03 V	2.367 V	22.8 mV	3.10 mV	60 kHz	16.96502 µs
sdev	186.2 mV	68.24 mV	848 µV	84.7 µV	73 Hz	19.5808 ns
num	208	208	208	208	5.824e+3	416
status	✔	✔	✔	✔	✔	✔
histo						

C1 1.00 V/div 0 mV offset | 5.00 mV/div 0.00 mV ofst | F1 zoom(C1) | Timebase 0 µs 50.0 µs/div 100 kS 200 MS/s | Trigger Stop 890 mV Edge Positive

800

0222



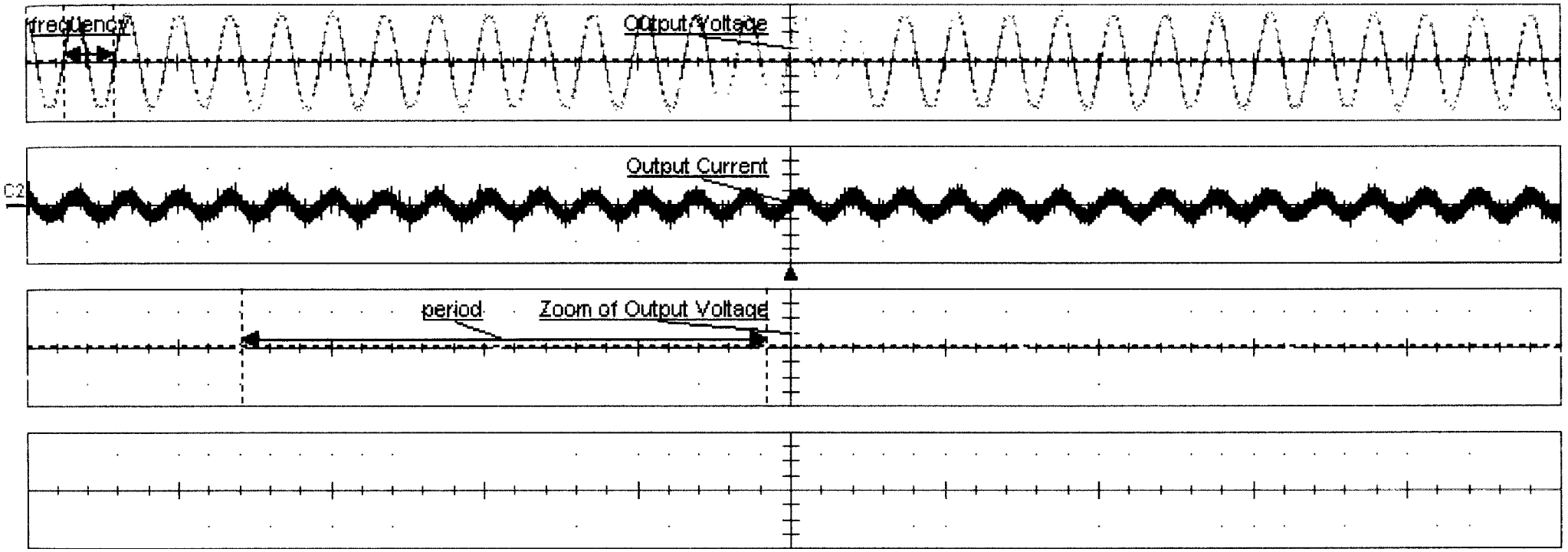
Measure	P1:pkpk(C1)	P2:rms(C1)	P3:pkpk(C2)	P4:rms(C2)	P5:freq(C1)	P6:period(F1)
value	6.85 V	2.312 V	18.3 mV	2.68 mV	59.1936 kHz	16.91311 µs
mean	6.7349 V	2.27524 V	17.523 mV	2.6386 mV	59.2 kHz	16.9028244 µs
min	6.58 V	2.235 V	15.7 mV	2.57 mV	59 kHz	16.83970 µs
max	6.89 V	2.313 V	20.6 mV	2.72 mV	59 kHz	16.96773 µs
sdev	109.9 mV	34.31 mV	740 µV	39.0 µV	76 Hz	22.4225 ns
num	204	204	204	204	5.712e+3	408
status	✔	✔	✔	✔	✔	✔

histo

C1		F1 zoom(C1)	Timebase 0 µs	Trigger
1.00 V/div	5.00 mV/div		50.0 µs/div	Stop 890 mV
0 mV offset	0.00 mV ofst		100 kS 200 MS/s	Edge Positive

9cc

0223



Measure	P1:pkpk(C1)	P2:rms(C1)	P3:pkpk(C2)	P4:rms(C2)	P5:freq(C1)	P6:period(F1)
value	6.85 V	2.323 V	17.5 mV	2.51 mV	59.1662 kHz	16.90824 µs
mean	6.7568 V	2.28560 V	16.990 mV	2.4486 mV	59.2 kHz	16.9012829 µs
min	6.58 V	2.245 V	15.5 mV	2.37 mV	59 kHz	16.81230 µs
max	6.89 V	2.323 V	19.4 mV	2.53 mV	59 kHz	16.97273 µs
sdev	102.5 mV	34.54 mV	792 µV	38.8 µV	75 Hz	22.0507 ns
num	205	205	205	205	5.740e+3	410
status	✔	✔	✔	✔	✔	✔
histo						

C1		F1 zoom(C1)	Timebase 0 µs	Trigger
1.00 V/div	5.00 mV/div		50.0 µs/div	Stop 890 mV
0 mV offset	0.00 mV ofst		100 kS 200 MS/s	Edge Positive

1000

0224

Sp1 513787

SP1 S13787 Section 1 Both Arm 1 Summary

	P1	P2	P3	P4	P5	P6	10:17:34 24.2C	41%
	pkpk(C1)	rms(C1)	pkpk(C2)	rms(C2)	freq(C1)	period(F1)		
Value	3.226206	1.029664	0.034472	0.009594	58823.53	1.71E-05		
Mean	3.213917	1.028819	0.035457	0.009587	58542.31	1.71E-05		
Max	3.314595	1.02982	0.038228	0.009615	59506.1	1.73E-05		
Min	3.093622	1.002657	0.03403	0.009335	57534.22	1.69E-05		
Num	205	205	205	205	5740	410		
St Dev	0.027806	0.001885	0.000776	1.93E-05	231.2021	6.64E-08		

	P1	P2	P3	P4	P5	P6	10:18:01
	pkpk(C1)	rms(C1)	pkpk(C2)	rms(C2)	freq(C1)	period(F1)	
Value	3.579762	1.164616	0.025633	0.00574	58737.15	1.71E-05	
Mean	3.613971	1.163415	0.025787	0.005733	58554.76	1.71E-05	
Max	3.668152	1.165069	0.028285	0.005758	59224.16	1.72E-05	
Min	3.447179	1.109183	0.023865	0.005452	57887.12	1.69E-05	
Num	208	208	208	208	5824	416	
St Dev	0.027813	0.006284	0.000848	3.24E-05	172.5167	4.66E-08	

	P1	P2	P3	P4	P5	P6	10:18:26
	pkpk(C1)	rms(C1)	pkpk(C2)	rms(C2)	freq(C1)	period(F1)	
Value	6.231438	2.093758	0.029389	0.006942	58494.96	1.71E-05	
Mean	6.241888	2.0918	0.028844	0.00693	58548.19	1.71E-05	
Max	6.319827	2.093765	0.030936	0.006954	58770.08	1.71E-05	
Min	5.922076	2.001445	0.02718	0.006628	58341.44	1.7E-05	
Num	203	203	203	203	5684	406	
St Dev	0.04459	0.009126	0.000722	3.11E-05	49.2302	1.37E-08	

	P1	P2	P3	P4	P5	P6	10:18:51
	pkpk(C1)	rms(C1)	pkpk(C2)	rms(C2)	freq(C1)	period(F1)	
Value	6.408217	2.149291	0.024307	0.005375	58538	1.71E-05	
Mean	6.382131	2.148221	0.024948	0.005372	58551.7	1.71E-05	
Max	6.452411	2.149735	0.026959	0.005397	58795.92	1.71E-05	
Min	6.098854	2.057819	0.023202	0.005139	58329.59	1.7E-05	
Num	205	205	205	205	5740	410	
St Dev	0.036467	0.008854	0.000765	2.41E-05	53.70312	1.53E-08	

	P1	P2	P3	P4	P5	P6	10:19:16
	pkpk(C1)	rms(C1)	pkpk(C2)	rms(C2)	freq(C1)	period(F1)	
Value	6.452411	2.183193	0.024086	0.004443	58607.13	1.71E-05	
Mean	6.472342	2.182067	0.022603	0.004423	58553.54	1.71E-05	
Max	6.5408	2.18343	0.025412	0.00445	58766.99	1.71E-05	
Min	6.231438	2.08882	0.020992	0.004215	58311.16	1.7E-05	
Num	204	204	204	204	5712	408	
St Dev	0.031632	0.006625	0.000793	1.77E-05	58.72275	1.83E-08	

	P1	P2	P3	P4	P5	P6	10:19:41

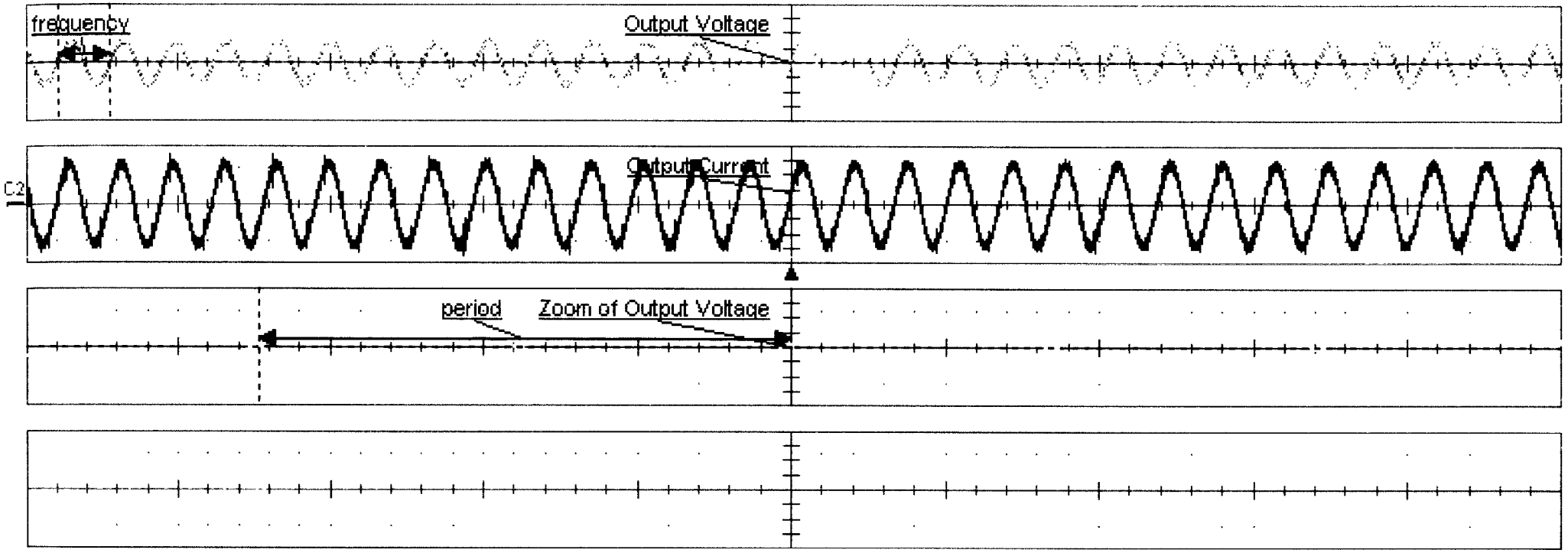
	pkpk(C1)	rms(C1)	pkpk(C2)	rms(C2)	freq(C1)	period(F1)
Value	6.5408	2.208559	0.02033	0.003686	58513.07	1.71E-05
Mean	6.5408	2.207539	0.020839	0.003693	58554.72	1.71E-05
Max	6.62919	2.20927	0.02276	0.003715	58881.72	1.71E-05
Min	6.275633	2.111377	0.019004	0.003536	58238.24	1.7E-05
Num	202	202	202	202	5656	404
St Dev	0.038838	0.009545	0.000722	1.84E-05	62.77496	1.86E-08

	P1	P2	P3	P4	P5	P6	10:20:07
	pkpk(C1)	rms(C1)	pkpk(C2)	rms(C2)	freq(C1)	period(F1)	
Value	6.364022	2.157966	0.018783	0.003154	58624.36	1.71E-05	
Mean	6.502919	2.189558	0.019662	0.003205	58586.92	1.71E-05	
Max	6.673384	2.225343	0.021876	0.003276	58900.89	1.71E-05	
Min	6.364022	2.148826	0.017899	0.003121	58129.34	1.7E-05	
Num	203	203	203	203	5684	406	
St Dev	0.095548	0.0329	0.000693	4.63E-05	71.91697	2.14E-08	

	P1	P2	P3	P4	P5	P6	10:20:34
	pkpk(C1)	rms(C1)	pkpk(C2)	rms(C2)	freq(C1)	period(F1)	
Value	6.62919	2.236359	0.017678	0.002844	58546.16	1.71E-05	
Mean	6.524144	2.202589	0.018961	0.00284	58589.6	1.71E-05	
Max	6.717579	2.239286	0.022539	0.002914	58852.83	1.71E-05	
Min	6.408217	2.160912	0.017236	0.002759	58132.7	1.7E-05	
Num	199	199	199	199	5572	398	
St Dev	0.096395	0.032532	0.000775	4.1E-05	72.82145	2.15E-08	

	P1	P2	P3	P4	P5	P6	10:21:01
	pkpk(C1)	rms(C1)	pkpk(C2)	rms(C2)	freq(C1)	period(F1)	
Value	6.496606	2.181928	0.017457	0.002498	58695.28	1.71E-05	
Mean	6.560634	2.21413	0.018273	0.002562	58588.52	1.71E-05	
Max	6.717579	2.247805	0.02033	0.00263	58856.96	1.71E-05	
Min	6.408217	2.178841	0.016352	0.002491	58309.04	1.7E-05	
Num	205	205	205	205	5740	410	
St Dev	0.098519	0.032752	0.000679	3.74E-05	72.14034	2.12E-08	

	P1	P2	P3	P4	P5	P6	10:21:27
	pkpk(C1)	rms(C1)	pkpk(C2)	rms(C2)	freq(C1)	period(F1)	
Value	6.673384	2.254779	0.018783	0.00242	58435.13	1.71E-05	
Mean	6.579146	2.220382	0.017676	0.002363	58588.02	1.71E-05	
Max	6.761773	2.255593	0.019888	0.002423	58903.18	1.71E-05	
Min	6.452411	2.183329	0.01591	0.002281	58319.63	1.7E-05	
Num	204	204	204	204	5712	408	
St Dev	0.093312	0.032838	0.000678	3.57E-05	71.72383	2.08E-08	

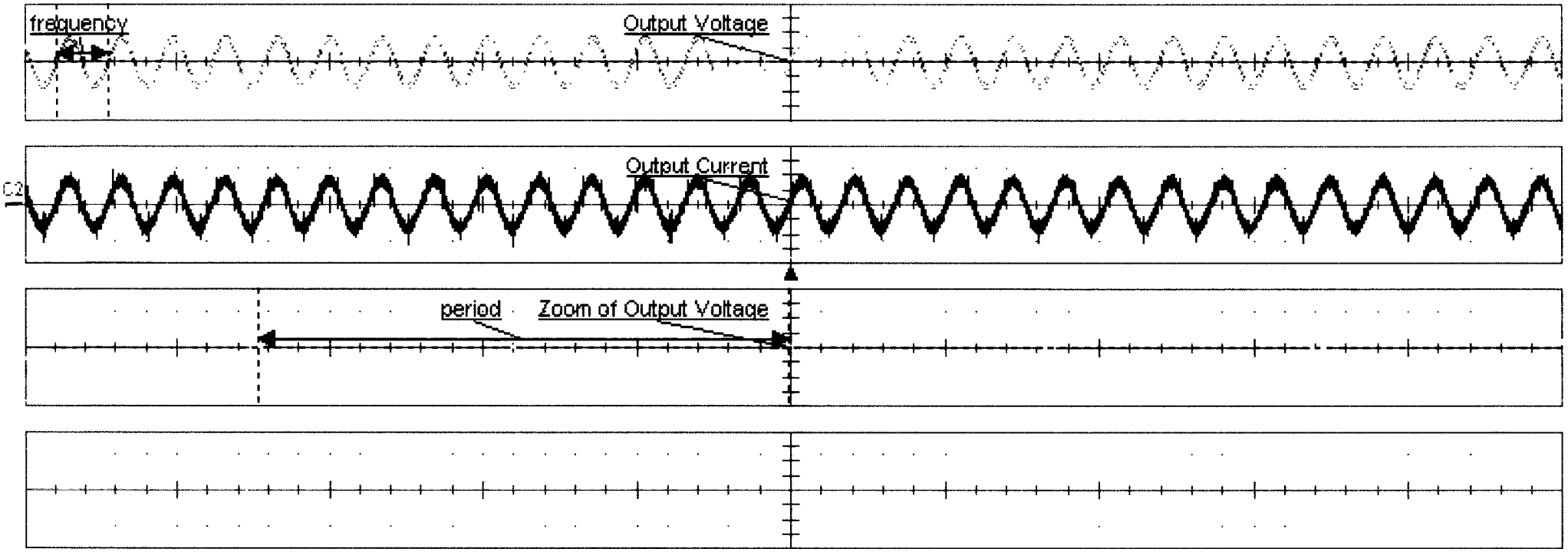


Measure	P1:pkpk(C1)	P2:rms(C1)	P3:pkpk(C2)	P4:rms(C2)	P5:freq(C1)	P6:period(F1)
value	3.23 V	1.030 V	34.5 mV	9.59 mV	58.8235 kHz	17.13000 µs
mean	3.2139 V	1.02882 V	35.457 mV	9.5873 mV	58.542 kHz	17.0857197 µs
min	3.09 V	1.003 V	34.0 mV	9.33 mV	57.5 kHz	16.87000 µs
max	3.31 V	1.030 V	38.2 mV	9.62 mV	59.5 kHz	17.30413 µs
sdev	27.8 mV	1.89 mV	776 µV	19.3 µV	231 Hz	66.3771 ns
num	205	205	205	205	5.740e+3	410
status	✔	✔	✔	✔	⚠	✔
histo						

C1		F1 zoom(C1)	Timebase 0 µs	Trigger C1
1.00 V/div	5.00 mV/div		50.0 µs/div	Stop 0.00 V
0 mV offset	0.00 mV ofst		100 kS 200 MS/s	Edge Positive

100

0227

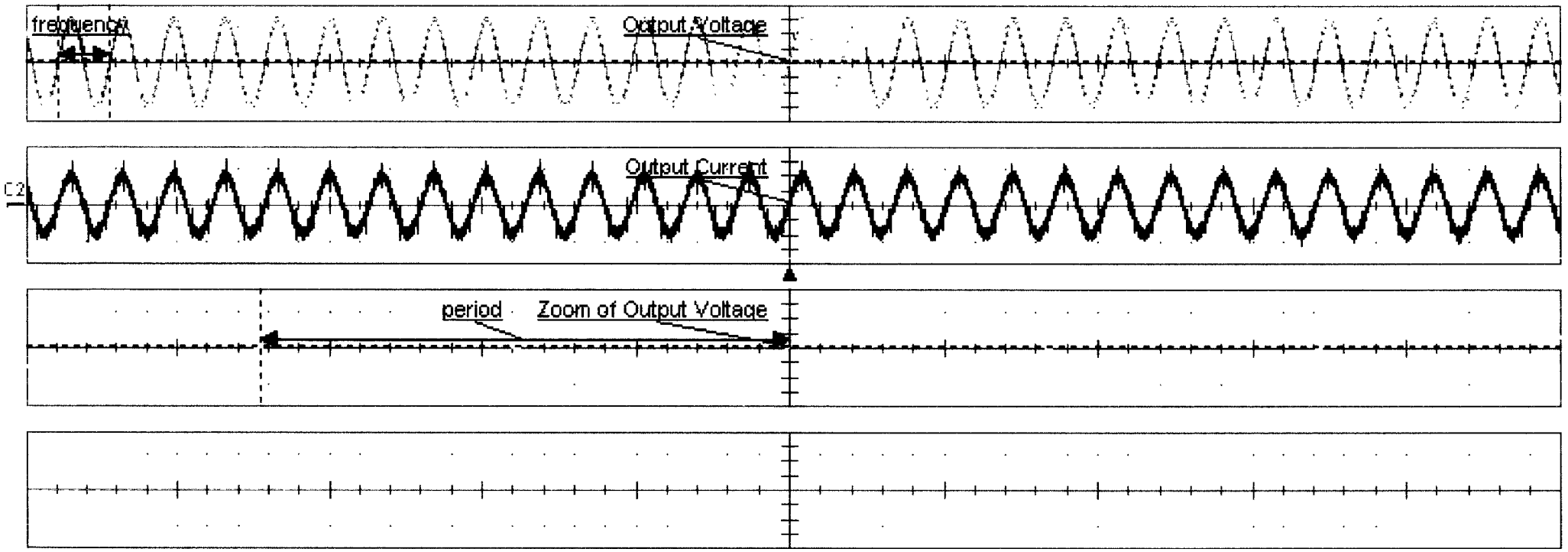


Measure	P1:pkpk(C1)	P2:rms(C1)	P3:pkpk(C2)	P4:rms(C2)	P5:freq(C1)	P6:period(F1)
value	3.58 V	1.165 V	25.6 mV	5.74 mV	58.7372 kHz	17.06500 µs
mean	3.6140 V	1.16341 V	25.787 mV	5.7330 mV	58.555 kHz	17.0758483 µs
min	3.45 V	1.109 V	23.9 mV	5.45 mV	57.9 kHz	16.92000 µs
max	3.67 V	1.165 V	28.3 mV	5.76 mV	59.2 kHz	17.21100 µs
sdev	27.8 mV	6.28 mV	848 µV	32.4 µV	173 Hz	46.5538 ns
num	208	208	208	208	5.824e+3	416
status	✔	✔	✔	✔	⚠	✔
histo						

C1		F1 zoom(C1)	Timebase 0 µs	Trigger C1
1.00 V/div	5.00 mV/div		50.0 µs/div	Stop 0.00 V
0 mV offset	0.00 mV ofst		100 kS 200 MS/s	Edge Positive

200

0228

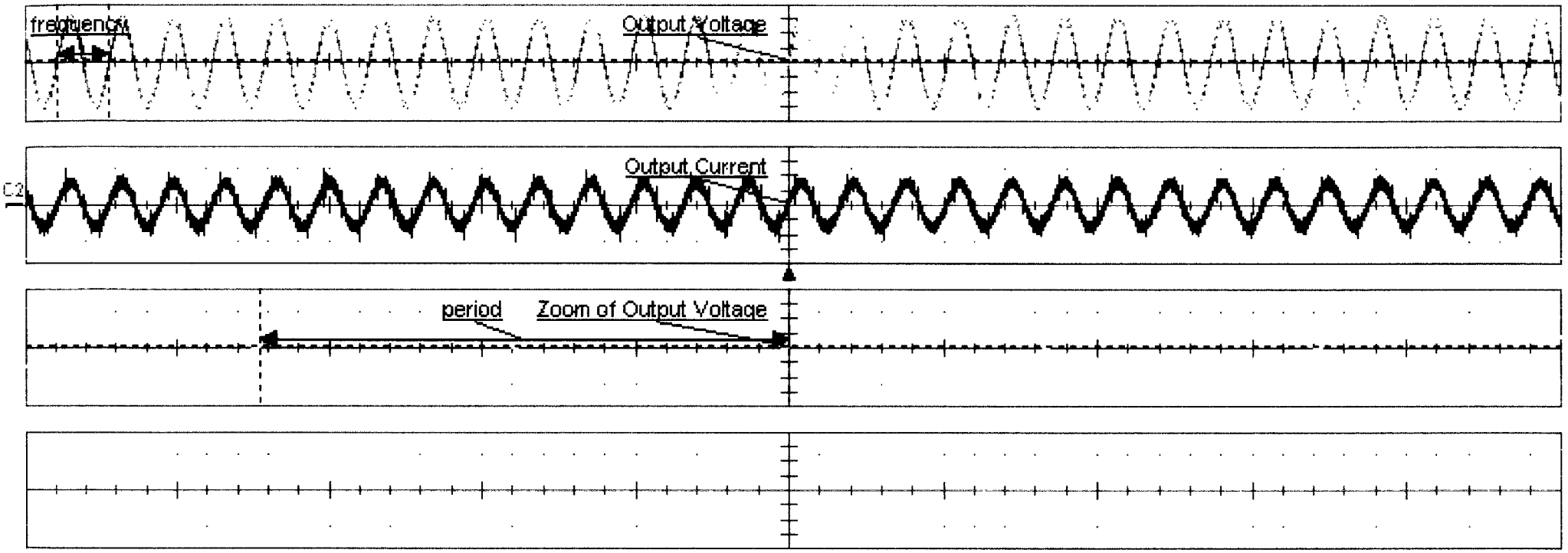


Measure	P1:pkpk(C1)	P2:rms(C1)	P3:pkpk(C2)	P4:rms(C2)	P5:freq(C1)	P6:period(F1)
value	6.23 V	2.094 V	29.4 mV	6.94 mV	58.4953 kHz	17.09507 µs
mean	6.2419 V	2.09180 V	28.844 mV	6.9304 mV	58.548 kHz	17.0793839 µs
min	5.92 V	2.001 V	27.2 mV	6.63 mV	58.3 kHz	17.01868 µs
max	6.32 V	2.094 V	30.9 mV	6.95 mV	58.8 kHz	17.11810 µs
sdev	44.6 mV	9.13 mV	722 µV	31.1 µV	49 Hz	13.6729 ns
num	203	203	203	203	5.684e+3	406
status	✔	✔	✔	✔	✔	✔
histo						

C1		F1 zoom(C1)	Timebase 0 µs	Trigger
1.00 V/div	5.00 mV/div		50.0 µs/div	Stop 0.00 V
0 mV offset	0.00 mV ofst		100 kS 200 MS/s	Edge Positive

300

0229

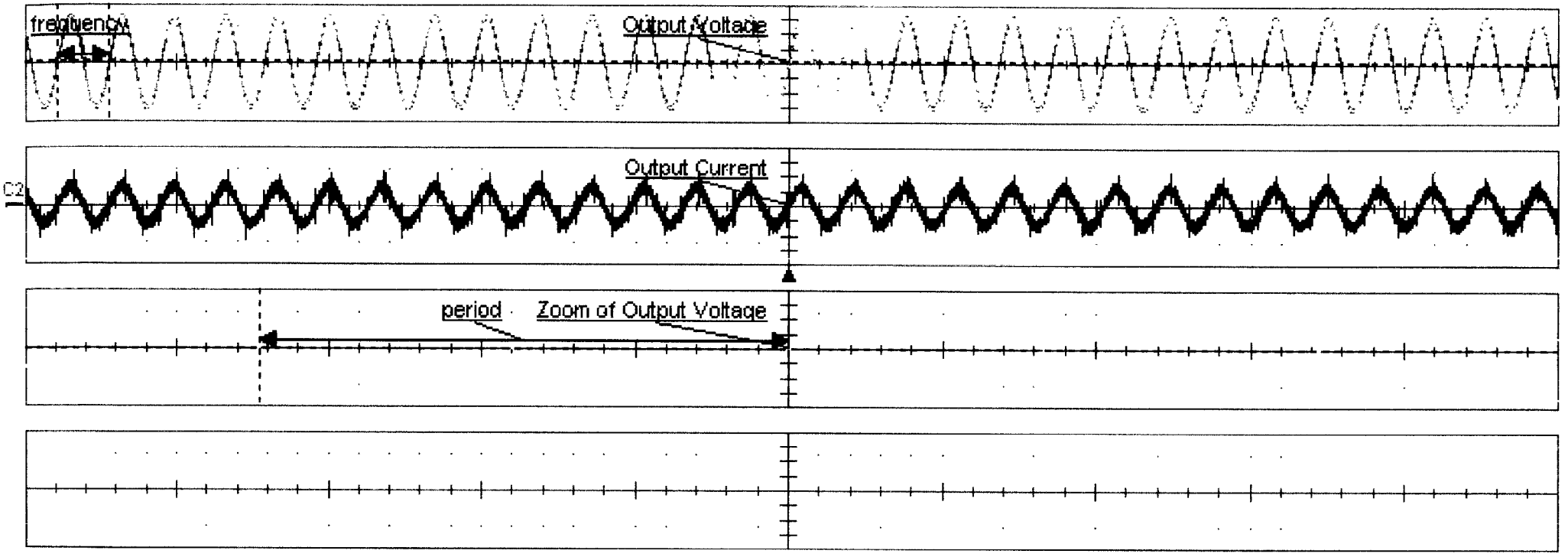


Measure	P1:pkpk(C1)	P2:rms(C1)	P3:pkpk(C2)	P4:rms(C2)	P5:freq(C1)	P6:period(F1)
value	6.41 V	2.149 V	24.3 mV	5.38 mV	58.5377 kHz	17.06853 µs
mean	6.3821 V	2.14822 V	24.948 mV	5.3718 mV	58.552 kHz	17.0796032 µs
min	6.10 V	2.058 V	23.2 mV	5.14 mV	58.3 kHz	17.03703 µs
max	6.45 V	2.150 V	27.0 mV	5.40 mV	58.8 kHz	17.12839 µs
sdev	36.5 mV	8.85 mV	765 µV	24.1 µV	54 Hz	15.3411 ns
num	205	205	205	205	5.740e+3	410
status	✔	✔	✔	✔	✔	✔

histo

400

0230



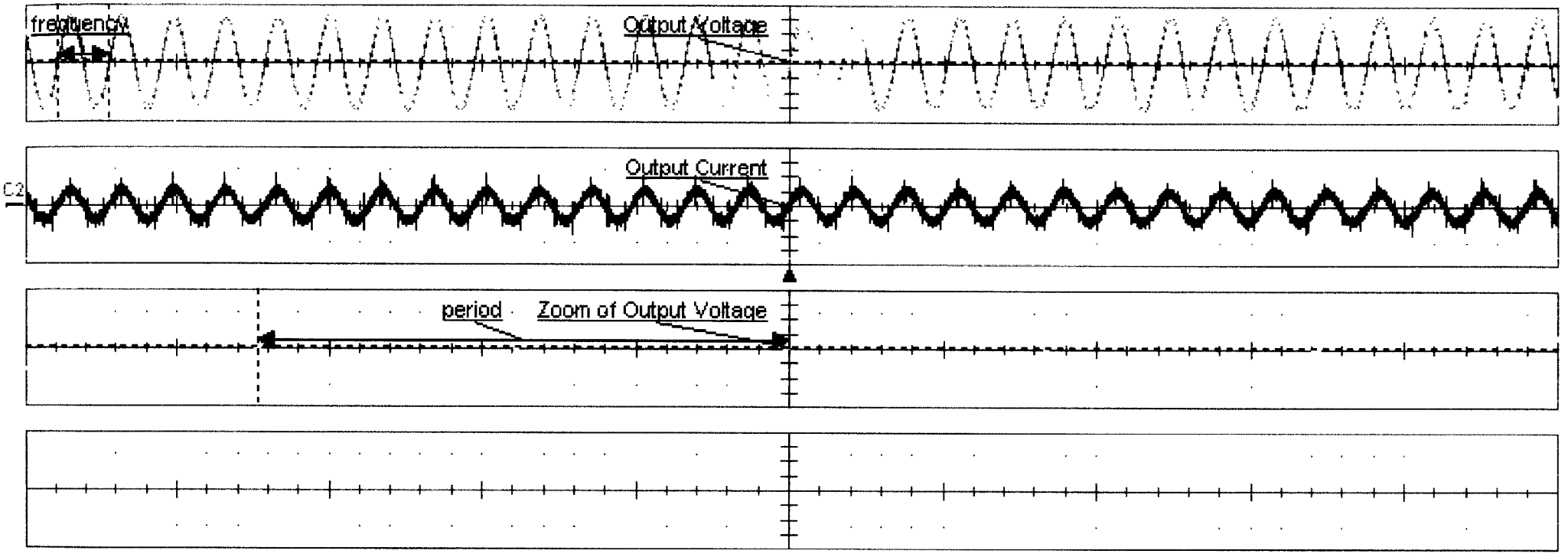
Measure	P1:pkpk(C1)	P2:rms(C1)	P3:pkpk(C2)	P4:rms(C2)	P5:freq(C1)	P6:period(F1)
value	6.45 V	2.183 V	24.1 mV	4.44 mV	58.6021 kHz	17.08090 µs
mean	6.4723 V	2.18207 V	22.603 mV	4.4230 mV	58.554 kHz	17.0777734 µs
min	6.23 V	2.089 V	21.0 mV	4.21 mV	58.3 kHz	16.99419 µs
max	6.54 V	2.183 V	25.4 mV	4.45 mV	58.8 kHz	17.12385 µs
sdev	31.6 mV	6.62 mV	793 µV	17.7 µV	59 Hz	18.3363 ns
num	204	204	204	204	5.712e+3	408
status	✔	✔	✔	✔	✔	✔

histo

C1 1.00 V/div 0 mV offset | 5.00 mV/div 0.00 mV ofst | F1 zoom(C1) | Timebase 0 µs 50.0 µs/div 100 kS 200 MS/s | Trigger Stop 0.00 V Edge Positive

500

0231

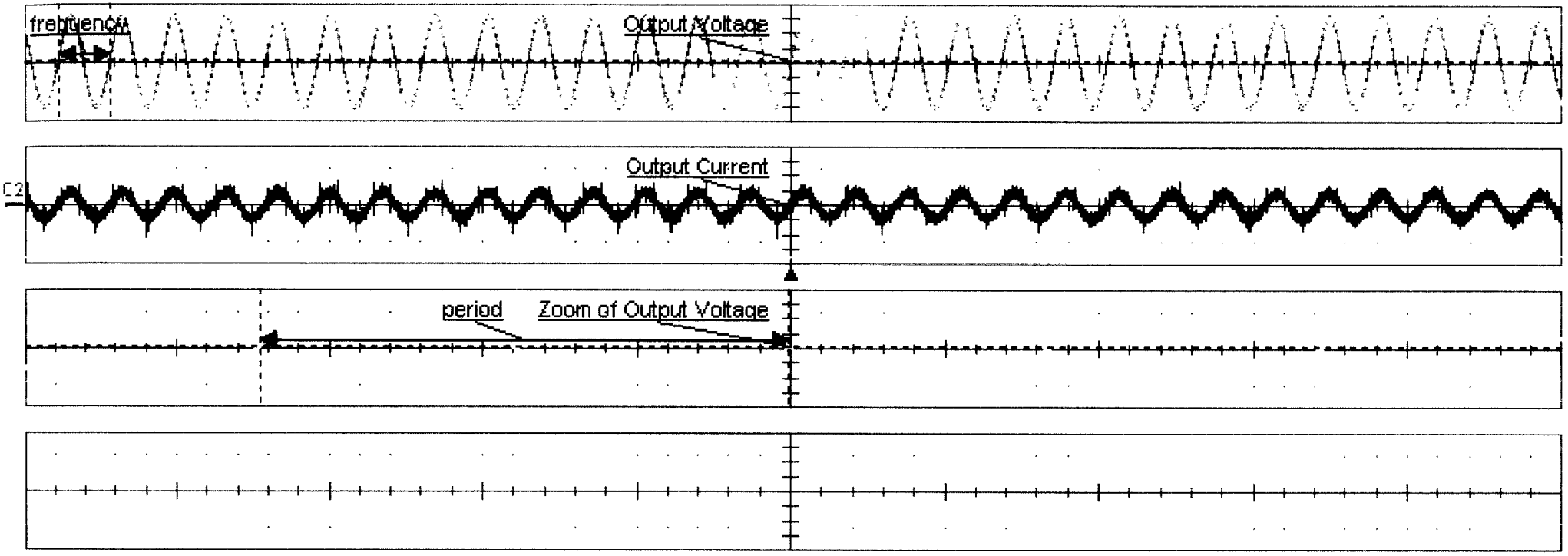


Measure	P1:pkpk(C1)	P2:rms(C1)	P3:pkpk(C2)	P4:rms(C2)	P5:freq(C1)	P6:period(F1)
value	6.54 V	2.209 V	20.3 mV	3.69 mV	58.5138 kHz	17.06173 µs
mean	6.5408 V	2.20754 V	20.839 mV	3.6926 mV	58.555 kHz	17.0774616 µs
min	6.28 V	2.111 V	19.0 mV	3.54 mV	58.2 kHz	17.02503 µs
max	6.63 V	2.209 V	22.8 mV	3.71 mV	58.9 kHz	17.14254 µs
sdev	38.8 mV	9.55 mV	722 µV	18.4 µV	63 Hz	18.6165 ns
num	202	202	202	202	5.656e+3	404
status	✔	✔	✔	✔	✔	✔
histo						

C1 1.00 V/div 0 mV offset | 5.00 mV/div 0.00 mV ofst | F1 zoom(C1) | Timebase 0 µs 50.0 µs/div 100 kS 200 MS/s | Trigger Stop 0.00 V Edge Positive

600

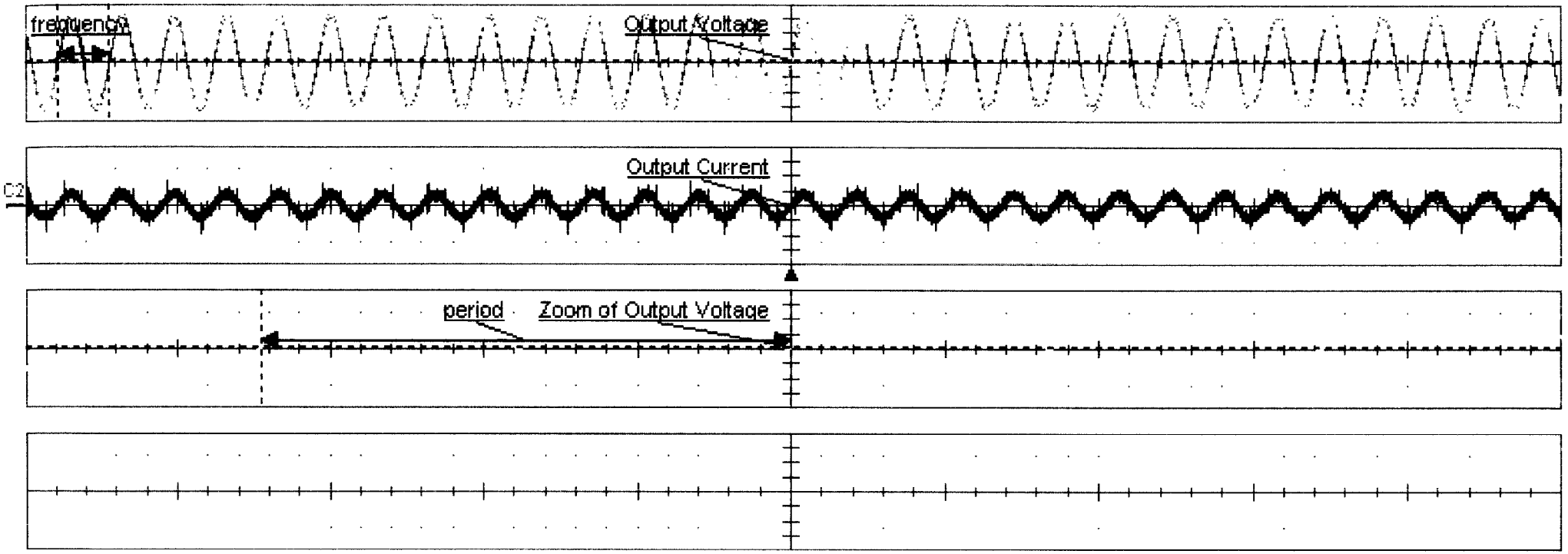
0232



Measure	P1:pkpk(C1)	P2:rms(C1)	P3:pkpk(C2)	P4:rms(C2)	P5:freq(C1)	P6:period(F1)
value	6.36 V	2.158 V	18.8 mV	3.15 mV	58.6228 kHz	17.06156 µs
mean	6.5029 V	2.18956 V	19.662 mV	3.2055 mV	58.587 kHz	17.0681008 µs
min	6.36 V	2.149 V	17.9 mV	3.12 mV	58.1 kHz	17.00483 µs
max	6.67 V	2.225 V	21.9 mV	3.28 mV	58.9 kHz	17.11720 µs
sdev	95.5 mV	32.90 mV	693 µV	46.3 µV	72 Hz	21.3684 ns
num	203	203	203	203	5.684e+3	406
status	✔	✔	✔	✔	✔	✔
histo						

C1 1.00 V/div 0 mV offset | 5.00 mV/div 0.00 mV ofst | F1 zoom(C1) | Timebase 0 µs 50.0 µs/div 100 kS 200 MS/s | Trigger Stop 0.00 V Edge Positive

700

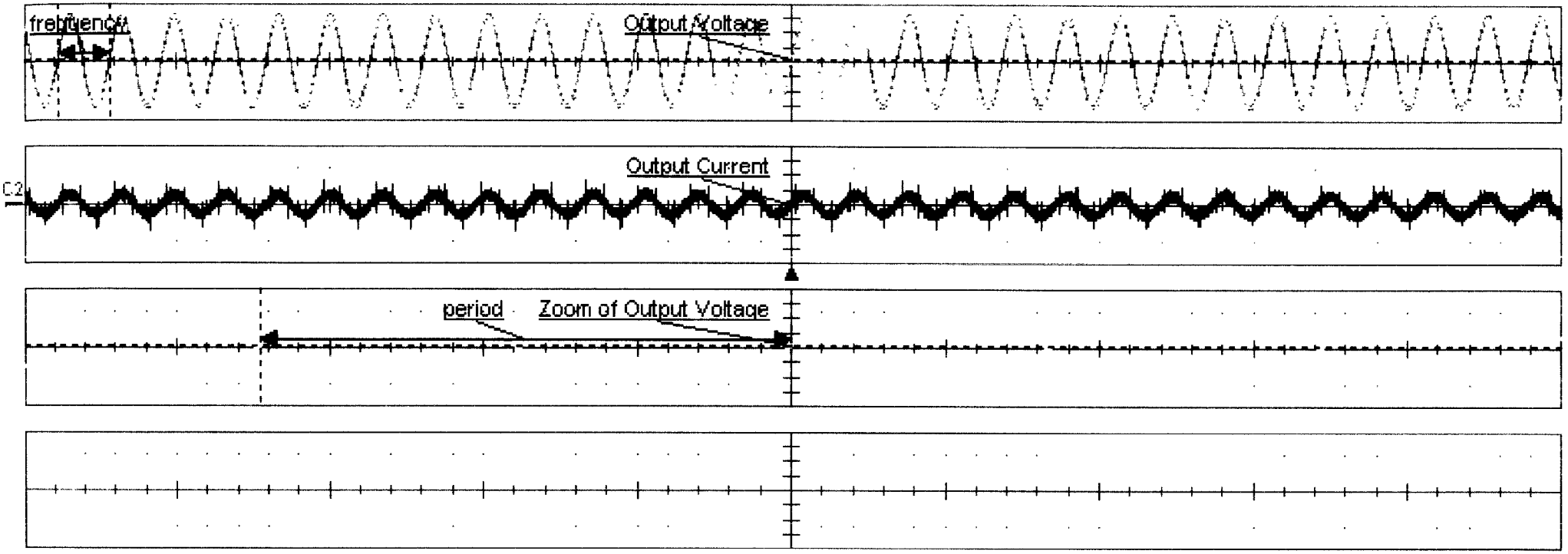


Measure	P1:pkpk(C1)	P2:rms(C1)	P3:pkpk(C2)	P4:rms(C2)	P5:freq(C1)	P6:period(F1)
value	6.63 V	2.236 V	17.7 mV	2.84 mV	58.5433 kHz	17.07050 µs
mean	6.5241 V	2.20259 V	18.961 mV	2.8399 mV	58.590 kHz	17.0684276 µs
min	6.41 V	2.161 V	17.2 mV	2.76 mV	58.1 kHz	17.00267 µs
max	6.72 V	2.239 V	22.5 mV	2.91 mV	58.9 kHz	17.14271 µs
sdev	96.4 mV	32.53 mV	775 µV	41.0 µV	73 Hz	21.5410 ns
num	199	199	199	199	5.572e+3	398
status	✔	✔	✔	✔	✔	✔
histo						

C1		F1 zoom(C1)	Timebase 0 µs	Trigger C1
1.00 V/div	5.00 mV/div		50.0 µs/div	Stop 0.00 V
0 mV offset	0.00 mV ofst		100 kS 200 MS/s	Edge Positive

800

0234



Measure	P1:pkpk(C1)	P2:rms(C1)	P3:pkpk(C2)	P4:rms(C2)	P5:freq(C1)	P6:period(F1)
value	6.50 V	2.182 V	17.5 mV	2.50 mV	58.6981 kHz	17.06608 µs
mean	6.5606 V	2.21413 V	18.273 mV	2.5616 mV	58.589 kHz	17.0685213 µs
min	6.41 V	2.179 V	16.4 mV	2.49 mV	58.3 kHz	17.00351 µs
max	6.72 V	2.248 V	20.3 mV	2.63 mV	58.9 kHz	17.13463 µs
sdev	98.5 mV	32.75 mV	679 µV	37.4 µV	72 Hz	21.2144 ns
num	205	205	205	205	5.740e+3	410
status	✔	✔	✔	✔	✔	✔

histo

C1 1.00 V/div 0 mV offset | 5.00 mV/div 0.00 mV ofst | F1 zoom(C1) | Timebase 0 µs 50.0 µs/div 100 kS 200 MS/s | Trigger C1 Stop 0.00 V Edge Positive

900

0235