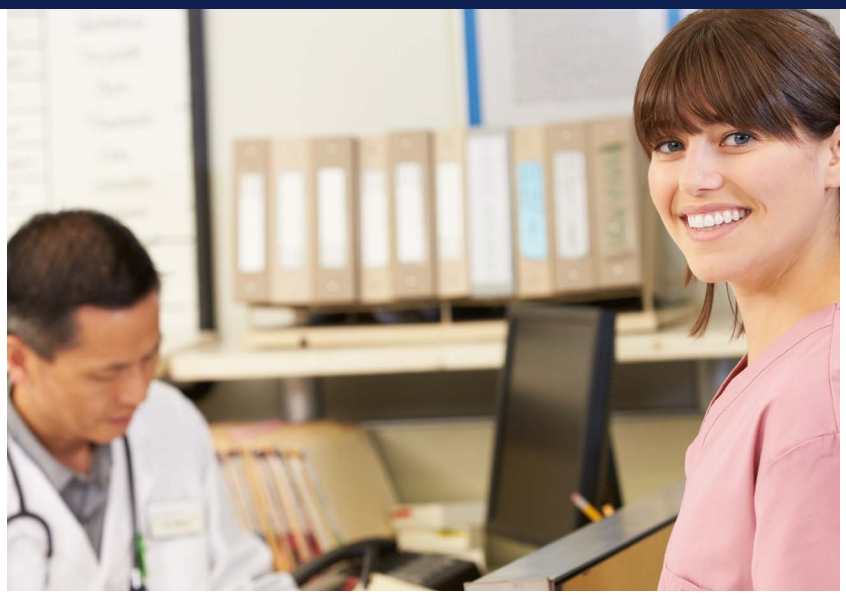
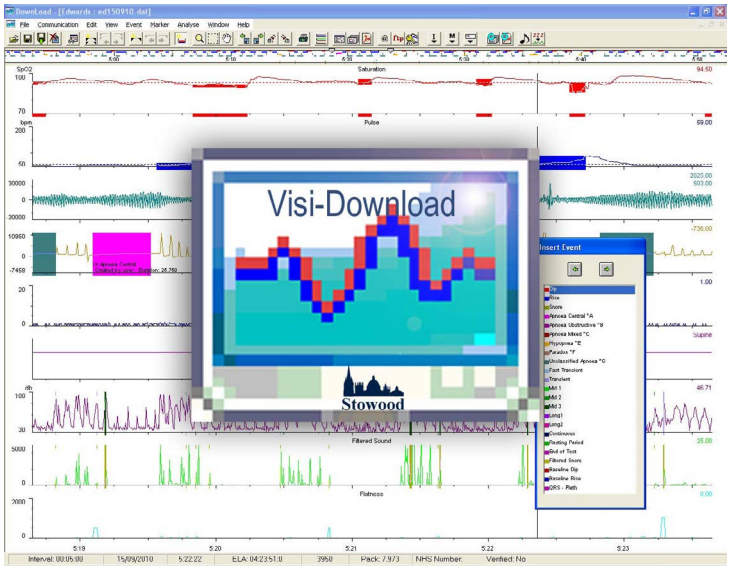


Stowood Visi-Download

Download, analysis, and reporting software for oximeters and capnometers

Visi-Download provides powerful multi-channel playback and analysis of sleep and six-minute walk tests. Developed over 25 years, **Visi-Download** interfaces with a wide range of devices, reducing training time for downloading, analysing, and interpreting results.



- Easy to use, fully automated package, supplied via the internet or on CD
- Single interface works with devices from multiple manufacturers
- Individually configurable analyses and reports
- High quality graphics
- Full statistical analysis

Visi-Download is available for many pulse oximeters, PCO_2, $ETCO_2$, PO_2, and other monitors, and in six European languages.

The 'gold standard' of download and reporting software, **Visi-Download** is in daily use in hospitals worldwide. Trial version available.

Stowood Scientific Instruments Ltd,
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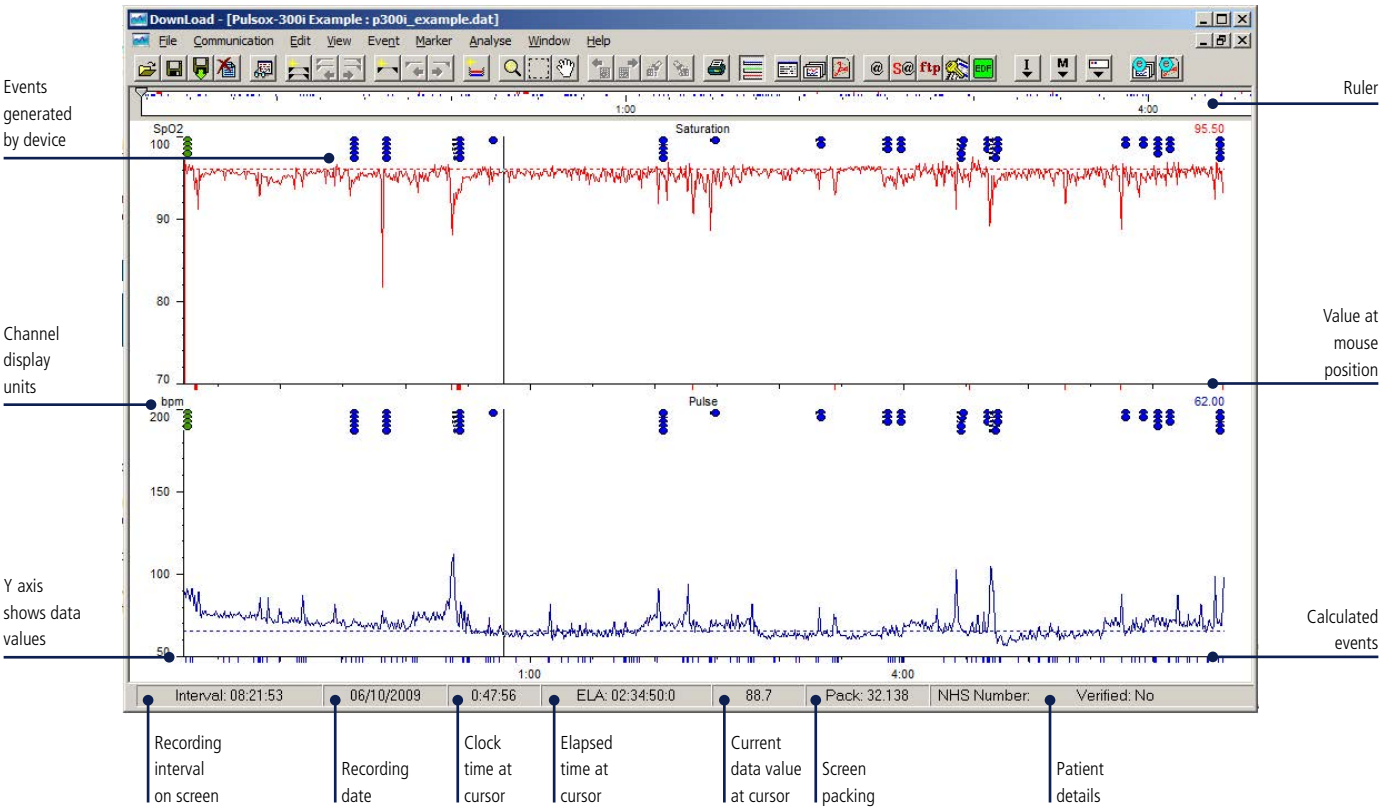
www.stowood.com
info@stowood.com

Easily review traces before analysing

Visi-Download has simple but powerful tools to review and mark recordings before creating an analysis or report.

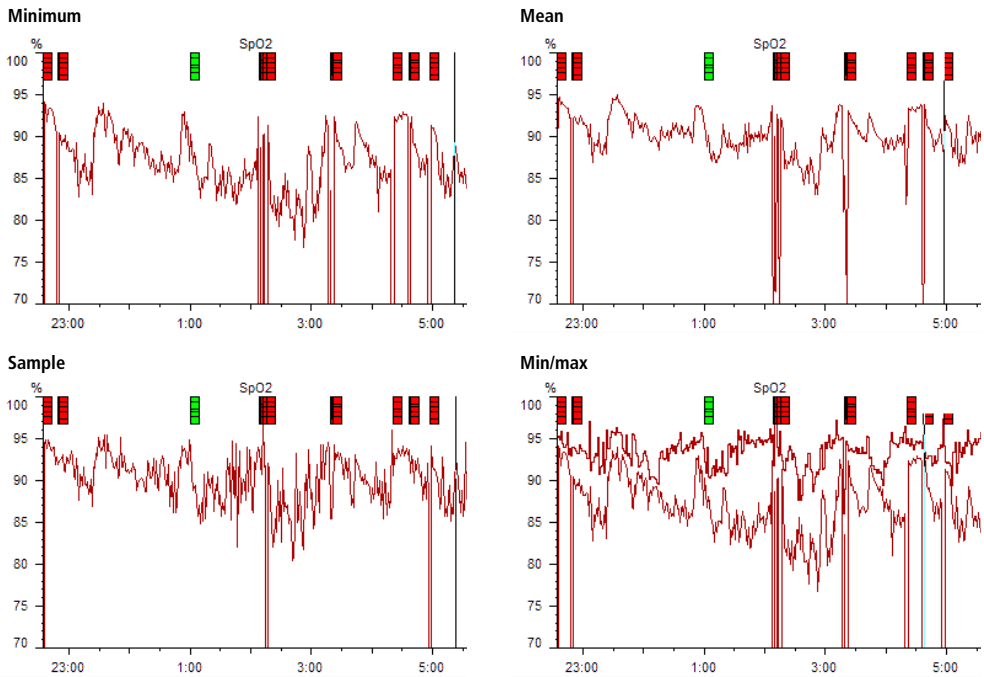


Powerful display modes allow better visualisation of data

Visi-Download incorporates varied methods of displaying data to further your analysis.

Data traces can be displayed via six different statistical methods (minimum, maximum, mean, sample, min/max, envelope), chosen automatically depending on signal type.

This permits a wider visualisation of data.



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www.stowood.com
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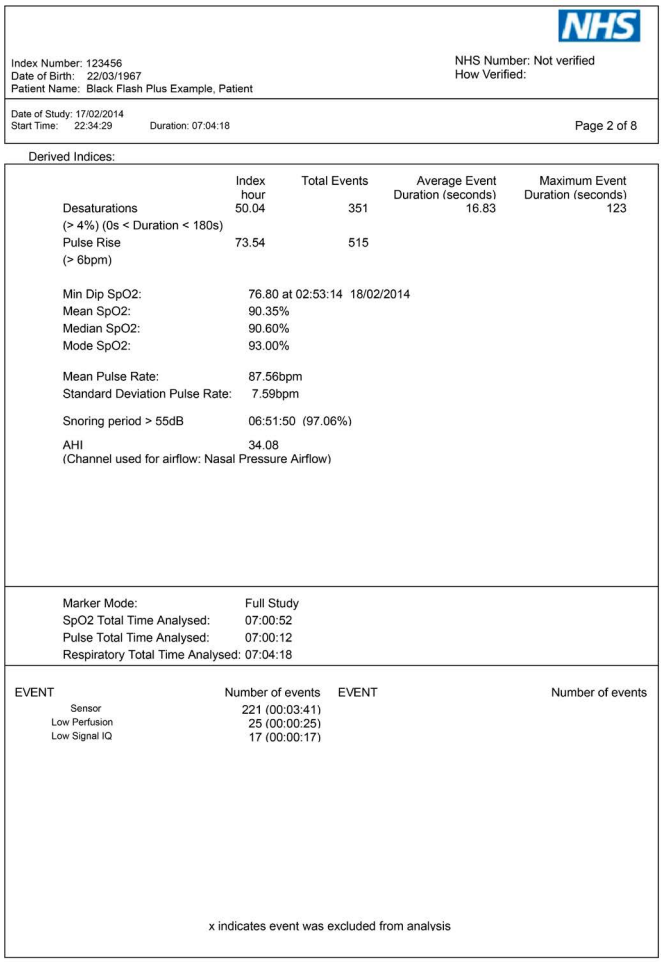
Built-in report templates

Visi-Download comes complete with a wide range of report templates with which to display recording data. These can each be customised, and examples are shown below.

Summary page with events excluded



NHS

Index Number: 123456
Date of Birth: 22/03/1967
Patient Name: Black Flash Plus Example, Patient

NHS Number: Not verified
How Verified:

Date of Study: 17/02/2014
Start Time: 22:34:29 Duration: 07:04:18

Page 2 of 8

Derived Indices:

	Index hour	Total Events	Average Event Duration (seconds)	Maximum Event Duration (seconds)
Desaturations (> 4%) (0s < Duration < 180s)	50.04	351	16.83	123
Pulse Rise (> 6bpm)	73.54	515		

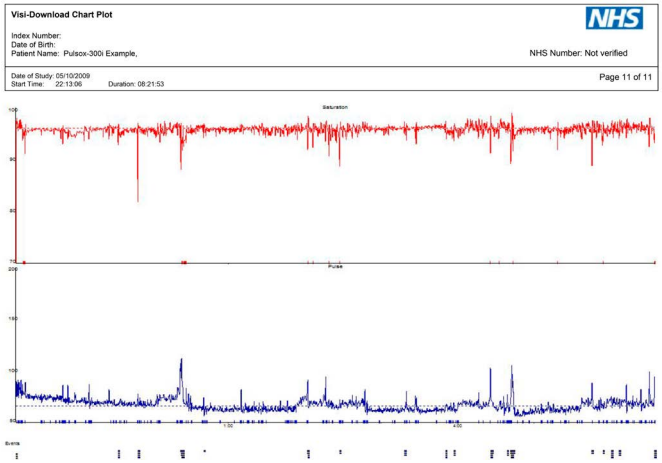
Min Dip SpO2:	76.80 at 02:53:14 18/02/2014
Mean SpO2:	90.35%
Median SpO2:	90.60%
Mode SpO2:	93.00%
Mean Pulse Rate:	87.56bpm
Standard Deviation Pulse Rate:	7.59bpm
Snoring period > 55dB	06:51:50 (97.06%)
AHI (Channel used for airflow: Nasal Pressure Airflow)	34.08

Marker Mode:	Full Study
SpO2 Total Time Analysed:	07:00:52
Pulse Total Time Analysed:	07:00:12
Respiratory Total Time Analysed:	07:04:18

EVENT	Number of events	EVENT	Number of events
Sensor	221 (00:03:41)		
Low Perfusion	25 (00:00:25)		
Low Signal IQ	17 (00:00:17)		

x indicates event was excluded from analysis

Whole night per sheet



Visi-Download Chart Plot

NHS

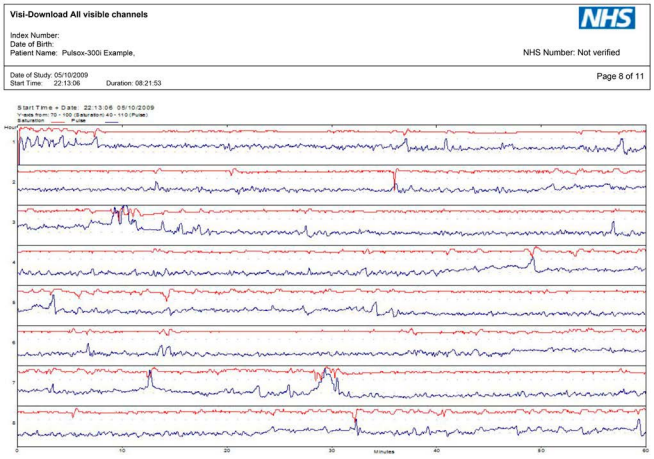
Index Number:
Date of Birth:
Patient Name: Pulsox-300i Example,

NHS Number: Not verified

Date of Study: 05/10/2009
Start Time: 22:13:06 Duration: 08:21:53

Page 11 of 11

One line per hour



Visi-Download All visible channels

NHS

Index Number:
Date of Birth:
Patient Name: Pulsox-300i Example,

NHS Number: Not verified

Date of Study: 05/10/2009
Start Time: 22:13:06 Duration: 08:21:53

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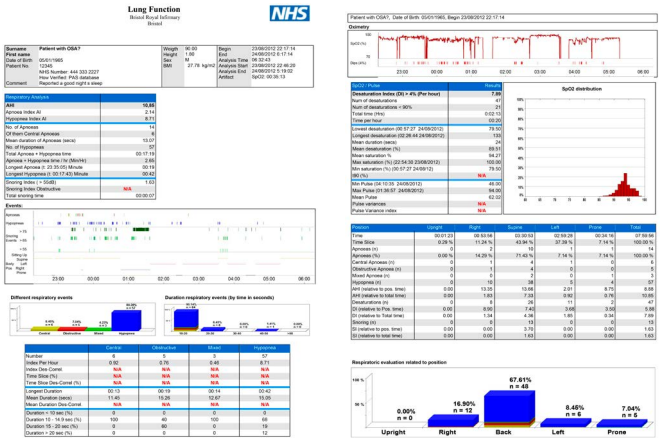
Varied visualizations



Lung Function
Royal Royal Infirmary
Bristol

NHS

Multiple traces

Visi-Download Chart Plot

NHS

Index Number: 123456
Date of Birth: 22/03/1967
Patient Name: Black Flash Plus Example, Patient

NHS Number: Not verified

Date of Study: 17/02/2014
Start Time: 22:34:29 Duration: 07:04:18

Page 8 of 8

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Deep analysis of data for a better diagnosis

As part of report generation, Visi-Download routinely performs deep analysis of the recording data. This analysis and the reports can be customised, but examples of the analysis are shown below.

Visi-Download SpO2 Analysis

Index Number: 123456
Date of Birth: 22/03/1967
Patient Name: Black Flash Plus Example, Patient

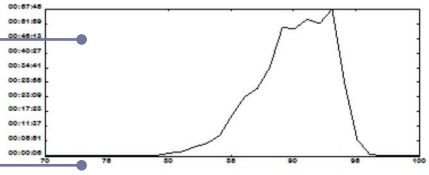
NHS Number: Not verified

Date of Study: 17/02/2014
Start Time: 22:34:29 Duration: 07:04:18

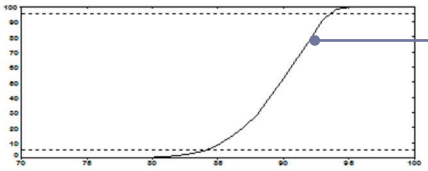
Page 4 of 15

Frequency graph

Frequency



Cumulative



Cumulative graph

Statistics

Mean:	90.35%		
Median:	90.60%		
Mode:	93.00%		
5th/95th Percentile:	85.00% / 94.40%		
	> 4%	> 3%	> 2%
Dips: (0s < Duration < 180s)	351	453	575
Dips/Hr:	50.04	64.58	81.97
Mean Nadir:	85.78%	86.47%	87.18%
Min Dip SpO2:	76.80 at 02:53:14 18/02/2014		
Max SpO2:	98.00 at 02:12:03 18/02/2014		

Detailed analysis

Delta Index 12s / 32s:	0.34 / 0.13
Rapid Resaturation Index:	77.13
Rapid Desaturation Index:	43.48
Time spent SpO2 < 88%	01:26:17 (20.50%)
Duration of Recording:	07:04:18
Marker Mode:	Full Study
Analysis Interval:	07:04:18
Total Time Analysed:	07:00:52
Total Time Missed:	00:03:26
< 25%:	00:03:26
Events Rejected:	00:00:00

Time spent

Time Spent		% of analysis Interval	Time Spent		% of analysis Interval
<98%	07:00:49	99.99	<78%	00:00:11	00.04
<96%	07:00:04	99.81	<76%	00:00:00	00.00
<94%	06:25:18	91.55	<74%	00:00:00	00.00
<92%	04:35:24	65.44	<72%	00:00:00	00.00
<90%	02:51:32	40.76	<70%	00:00:00	00.00
<88%	01:26:17	20.50	<68%	00:00:00	00.00
<86%	00:36:30	08.67	<66%	00:00:00	00.00
<84%	00:12:15	02.91	<64%	00:00:00	00.00
<82%	00:03:38	00.86	<62%	00:00:00	00.00
<80%	00:00:49	00.19	<60%	00:00:00	00.00

List of minima

SpO2 Minima in Dips

01 - 76.80 at 02:53:14 18/02/14	06 - 80.00 at 02:26:24 18/02/14
02 - 77.60 at 02:44:47 18/02/14	07 - 80.00 at 02:42:33 18/02/14
03 - 78.90 at 02:54:31 18/02/14	08 - 80.30 at 02:39:36 18/02/14
04 - 79.20 at 02:28:54 18/02/14	09 - 80.30 at 02:41:15 18/02/14
05 - 79.80 at 03:02:04 18/02/14	10 - 80.30 at 03:05:22 18/02/14

List of dips & minima
Sound analysis including fast transients
And many others

Visi-Download Pulse Analysis

Index Number: 123456
Date of Birth: 22/03/1967
Patient Name: Black Flash Plus Example, Patient

NHS Number: Not verified

Date of Study: 17/02/2014
Start Time: 22:34:29 Duration: 07:04:18

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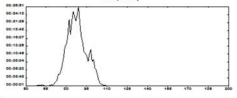
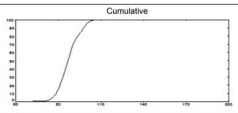
Frequency



Cumulative



Mean:	87.56bpm		
Median:	87.00bpm		
Mode:	89.00bpm		
Standard Deviation:	7.59bpm		
	> 6bpm	> 7bpm	> 14bpm
Pulse Rises:	515	442	124
Rises/Hr:	73.54	63.11	17.71
Max Pulse Peak:	111.00 at 22:34:40 17/02/2014		
Duration of Recording:	07:04:18		
Marker Mode:	Full Study		
Analysis Interval:	07:04:18		
Total Time Analysed:	07:00:12		
Total Time Missed:	00:04:06		
< 25 bpm:	00:04:08		
Events Rejected:	00:00:00		

Pulse Minima	Pulse Maxima
01 - 51.00 at 03:19:22 18/02/14	01 - 111.00 at 22:34:40 17/02/14
02 - 58.00 at 03:19:50 18/02/14	02 - 110.00 at 22:38:39 17/02/14
03 - 59.00 at 03:20:32 18/02/14	03 - 109.00 at 22:35:17 17/02/14
04 - 61.00 at 03:20:20 18/02/14	04 - 109.00 at 02:56:49 18/02/14
05 - 63.00 at 02:15:53 18/02/14	05 - 107.00 at 23:28:18 17/02/14
06 - 66.00 at 05:35:26 18/02/14	06 - 107.00 at 23:37:23 17/02/14
07 - 68.00 at 04:14:35 18/02/14	07 - 106.00 at 23:28:49 17/02/14
08 - 68.00 at 05:33:12 18/02/14	08 - 106.00 at 23:34:00 17/02/14
09 - 68.00 at 05:34:30 18/02/14	09 - 106.00 at 02:13:31 18/02/14
10 - 70.00 at 02:27:42 18/02/14	10 - 106.00 at 02:15:03 18/02/14

Visi-Download Sound Analysis

Index Number: 123456
Date of Birth: 22/03/1967
Patient Name: Black Flash Plus Example, Patient

NHS Number: Not verified

Date of Study: 17/02/2014
Start Time: 22:34:29 Duration: 07:04:18

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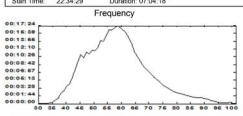
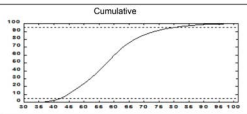
Frequency



Cumulative



Mean:	58.34dB		
Median:	58.00dB		
Mode:	58.00dB		
5th/95th Percentile:	42.00dB / 79.00dB		
Standard Deviation:	10.95dB		
(1) Fast Transient 100 - 200ms > 60dB	542		
(2) Transient 200 - 300ms > 60dB	482		
Mid 300 - 3000ms	(3) > 55dB	(4) > 65dB	(5) > 75dB
Total	1065	3099	4378
Total/Hr	150.60	438.23	619.09
Total Period of (3+4+5):	02:28:27		
(6) Long1 3000 - 4000ms > 55dB	200		
(7) Long2 4000 - 5000ms > 55dB	79		
(8) Continuous 5000 - 20000ms > 55dB	87		
Snoring period > 55dB	06:51:50 (97.06%)		
Duration of Recording:	07:04:18		
Marker Mode:	Full Study		
Analysis Interval:	07:04:18		
Total Time Analysed:	07:04:18		
Total Time Missed:	00:00:00		

Time Spent		% of analysis Interval	Time Spent		% of analysis Interval
>99 dB	00:00:00	00.00	>66 dB	01:25:55	20.25
>96 dB	00:00:26	00.11	>63 dB	01:57:43	27.74
>93 dB	00:00:59	00.24	>60 dB	02:41:42	38.11
>90 dB	00:02:47	00.66	>57 dB	03:32:30	50.08
>87 dB	00:06:11	01.46	>54 dB	04:22:22	61.84
>84 dB	00:10:13	02.41	>51 dB	05:05:25	71.98
>81 dB	00:15:32	03.66	>48 dB	05:41:42	80.54
>78 dB	00:22:25	05.29	>45 dB	06:14:30	88.27
>75 dB	00:31:34	07.44	>42 dB	06:42:28	94.86
>72 dB	00:44:27	10.48	>39 dB	06:56:34	98.18
>69 dB	01:02:17	14.68	>36 dB	07:03:01	99.70

Six-minute walk test reports

Visi-Download has two walk test reports built-in - the Endurance Shuttle Walk Test, and the Incremental Shuttle Walk Test. These can be modified to suit the clinician's needs.

6 Minute Walk Test (6MWT)

NHS

Patient details

Patient Name:	Smithtest, Joantest		
Index number:	547647		
Date of Birth:	16/10/1979		NHS Number: Not verified
Date of Study: 27/09/2006	**Start Time:** 9:45:00		**Duration:** 00:11:18
Sex: F	**Age:** 26 yrs	**Height:** 1.57 m	**Weight:** 53.00 kg **BMI:** 21.50

Clinical details

Distance walked

Test #:	1	**Systolic BP (mmHg):**	120
End Borg:	2	**Diastolic BP (mmHg):**	80
Distance (m):	560	**Pre Borg:**	0.5

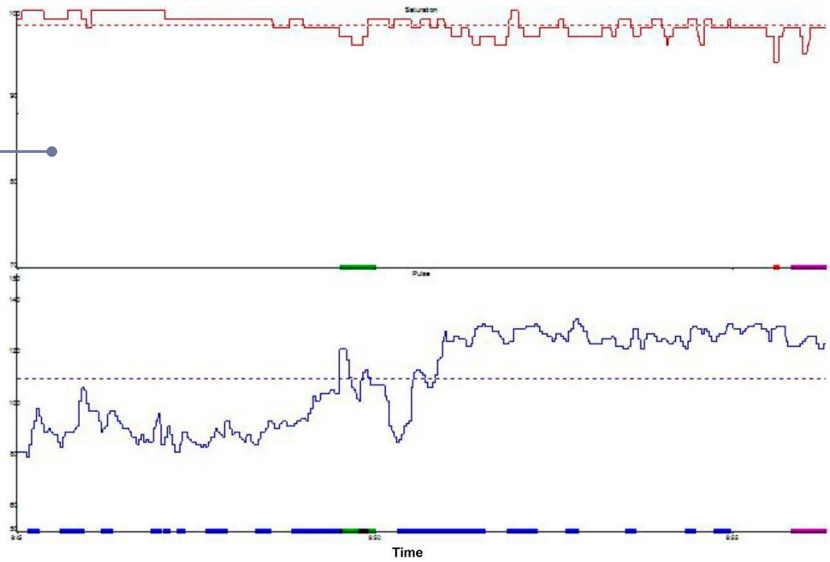
Test details

Duration < 6min		**Supp. 02 req**	N
- Flow (L/min)		**- Delivery Device:**	
- Transport Mode			
Stop/pause < end:	N	**Other symptoms-end:**	
- reason:			

Oximetry during test

Pre SpO2 (%):	97.07	**Pre Pulse Rate (bpm):**	110.80
End SpO2 (%):	97.40	**End Pulse Rate (bpm):**	123.47
Min SpO2 dip:	94.00 at 09:55:34 27/09/2006		

Data traces



Free text input

Comments
healthy patient

Key features

Multi-**device**, multi-**language** program: Visi-Download gets you away from dedicated, simplistic manufacturers' own offerings or limited report generating software.

Presentation with customisable quality graphics: view the signals **any way you like** (full control over scales, time axes, compression). Create, save, and easily apply your preferred methods of viewing.

Device **events** are marked on traces using colour-coding (e.g. low perfusion, artefact etc.), and these or other periods may be excluded from analysis automatically or manually.

Full statistical analysis: desaturations, pulse rise and CO_2 analyses are configurable, with high quality graphics and data tables - including Delta Index and Rapid Resaturation analyses.

Event confirmation and editing: events (e.g. low perfusion, artefact etc.) may be viewed and fully edited in any time axis.

Data management

Select recordings on the PC or archive by reverse chronological order, alphabetically or using search facility by patient name/ID.

Import data from simultaneous recordings, including actimetry and snoring.

Artefact and cut-off **rejection**, easily adjustable axes, user set montages, editable detected events. **Export** all or selected period/ channels of data to **database or spreadsheet** (Text, Excel, Matlab, Access, EDF formats).

Combining of interrupted recordings, or splitting of recordings on more than one subject and saving separately.

Comments, diagnoses may be entered at the keyboard for printing.

Timesaving "**Download, analyse and print in one**" feature.

72 day capability for long-term oximetry.

Reports may be **configured** for the hospital/lab (headings,pages, axes etc.) and printed in B&W or colour, on screen, on paper in international (e.g. A4 or US letter page sizes) and as PDF files for computer faxing or emailing. Uses metric or US measurements and dates in any Windows format.

Analysis

Printed reports, traces, headings, pages, analysis features can be chosen and configured for the hospital/lab. SpO_2, pulse rate, PCO_2, and other analyses include:

Distribution and cumulative graphics (axes adjustable)

Mean, Median, Mode, Minima, SD

5th/ 95th %iles, dip rates (3 settable levels)

Mean nadir

Delta Index

Rapid Resaturation & Desaturation Indices

Time below xx%, lowest saturation etc.

Automated LM and PLM analysis

Computer requirements

Microsoft Windows™ XP/ Vista/ 7/ 10 with USB port.

300 MB for installation file.

Compatible devices*

Manufacturer	Devices
BCI	Capnocheck SLEEP/Oxi-Pulse 3304, SPECTRO2 10/20, SPECTRO230
Bitmos	sat 801, 801+, 805, 816, 901, 901+
BMC	Polywatch
Creative	PC-68B
GE/Datex-Ohmeda	3700, 3740, 3800, 3900, TruSat
Konica Minolta	Pulsox 3i, 3iA, 300i
Masimo	Radical, Rad-5, Radical-7, Radical-7 Touch, Rad-8, Rad-9, Rad-57, Rad-87, Rad-97, Rad-97 $ETCO_2$
Mindray	PM60
Nonin	2500 Palmsat, 7500 Benchtop, 3150 WristOx2 Bluetooth, RespSense II, LifeSense II, 3150 WristOx2 BLE
Radiometer.	TOSCA, TOSCA 500, TCM4, TCM40, TCM 400, TCM TOSCA, TCM CombiM, TCM5
Sentec	SDMS CO_2
Stowood	Grey Flash, Black Flash, Black Flash Plus, Black Shadow, Visi-System

* Devices are continually being added. Contact us if you're interested in adding your device to this list.

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