

RESEARCH CENTER OF ADVANCED ROBOTICS AND ENVIRONMENTAL SCIENCE

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**REPORT  
TESTS OF THE "VERNANDA GEO" DEVICE  
(THE PROJECT NO. 290914-3457-UA)**

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# REPORT

## Tests of the "Vernanda Geo" device (the project No. 290914-3457-UA)

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### 1 TERMS OF THE TESTS

The Laboratory of Advanced Sensors (Cybertronica Research, Stuttgart, Germany), further the CYB, and Spinor International (Kiev, Ukraina), further the SI, agreed to perform a series of measurements with the following goals:

1. Performing single biological and physical measurements with the device "Vernanda Geo" (denoted further as the VG device, see Fig. 7.1).
2. Estimating those measurements that indicate a sensitivity to operation of the VG device.

It needs to point out that neither the verification of the declared functionality of the VG-device nor performing the statistically significant number of measurements are the point of these tests. Moreover, since the tests are performed in careful isolation of electromagnetic and thermal impact factors, the measurements with WiFi access points are related to the VG device only and cannot be considered as tests of the Wi-Fi technology itself – in any aspects.

Tests started 03.11.14 and finished 27.01.15. It was initially agreed to perform only 9 different tests, however in total about 45 tests have been performed.

### 2 METHODOLOGY AND USED INSTRUMENTS

These tests underlie the common conditions for performing tests on unconventional (ultra-weak) impact factors, as described in [1], [2]. In particular, it means an isolation from thermal, EM<sup>1</sup>, mechanical, and acoustic environmental influences. In discussion and in agreement with the SI, the following specific methodology was adapted for these tests:

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<sup>1</sup>See e.g. the EMC Directive 2014/30/EU (former 2004/108/EG).

1. The yeast fermentation test (the V-YFT/YFT tests, see [3], more generally [4]), the pH/dpH measurements (the dpH test, see [5]), and the DC conductivity measurements (the EDL test, see [6]) are performed.
2. Additionally, CYB used the phytosensor *cactaceae* (the tissue conductivity measurement, 0.5MHz) for measurements with the VG device, denoted further as the PC test, see more in [2].
3. The control attempts are performed when the Wi-Fi access point was on (transmitting data) and the VG-device was off, the experimental attempts mean the case when both devices are on. Based on difference between control/experimental attempts, a sensitivity of specific measurements is estimated. It was agreed to perform only a low number of attempts of each kind, however the CYB increased the number of replications to increase a reliability of results.
4. The dpH/EDL tests are additionally performed only with the VG device (repeated twice). They are further denoted as the VG attempts.
5. The following equipment was used: EMI Spectrum Analyzer Aaronia SPECTRAN NF-5010, the V-YFT and pdH systems based on the MU2.0 measurement unit, the parallel DC (with deeply polarized electrodes) conductometric system, general laboratory electric and measurement equipment. For tests two different wireless gigabit routers are used, see a general setup in Figs. 7.2 and 7.3.
6. CYB and SI agreed to remove the non-disclosure condition from results of performed experiments shown in this report.

All tests are separated into two blocks: YFT tests and EDL/Phyto/dpH tests. They were performed at different time (November 2014 and January 2015) and by two different persons. Several measurements for YFT tests have been done as a blind approach with two persons (one person is coding attempts/results, another person performs experiments).

### 3 OVERVIEW OF THE OBTAINED RESULTS

Table 3.1 provides overview of the performed measurements and obtained results, the detailed information can be found in the attachment.

### 4 MAIN CONCLUSIONS

1. The VG device is an emitter of weak electric field ( $f_{main} = 50Hz$ ), see Fig.7.5. The VG device emits a weak 'high-penetrating' emission as confirmed by all performed EDL and dpH tests. Several measurements indicated that the impact from the VG device is more intensive close to external power supply lines, see Figs.7.16, 7.18. The phytosensor at the distance of 1.6m did not register the impact from the VG device, see Fig.7.14, but registered the impact from WiFi and WiFi+VG devices.

Table 3.1: Overview of the performed measurements and obtained results.

N	Test	General results in relation to the VG-device	Comment
1	Electric test	the VG device emits weak alternating electric field.	the consumed current $3.45\mu A$ (220V AC), there are differences in spectra of E-field when the device is on/off, see Fig. 7.5.
2	YFT/V-YFT tests	positive, the test is sensitive to operation of the VG-device.	YFT and V-YFT indicated inhibition of control population in comparison to experimental population, see Tables 7.1-7.6. To increase the reliability of results, the control/experimental attempts were repeated twice with comparable outcomes. The difference of results without/with the VG device is 1.33 to 0.67 (weighted, statistically non-significant, N of populations 224 to 160), see Table 7.7.
3	Phyto tests (tissue conductivity, 0.5MHz, phytosensor <i>cactaceae</i> )	no impact from the VG device, weak impact from the WiFi and WiFi+VG devices, the distance in both cases 1.6m.	Phytosensor can be considered as sensitive to the VG and WiFi devices, see Fig. 7.14, when to validate the stress level of plant organisms to EM/non-EM emission.
4	pH/dpH tests, setups 1, 2	all control/experimental tests confirm impact of WiFi and WiFi+VG devices.	the setup 2 was accidentally placed into unshielded laboratory thermostatic oven, it results in a noisy dpH dynamics, see Figs. 7.16, 7.18, 7.20, 7.22. These measurements were not removed from final results because the stand-alone VG device indicated transmitting an essential impact via external power supply lines (power supply of the dpH device was noise/impact free), see Figs. 7.16, 7.18. Also the setup 1 demonstrated anomalous ph/dpH dynamics in case of WiFi+VG devices, see Fig. 7.21. We recommend the manufacturer considers both effects more carefully.
5	EDL tests (DC conductometry with deep polarized electrodes)	all control/experimental tests confirm the impact of WiFi and WiFi+VG devices	similar impact in all cases, see Figs. 7.10-7.13.
6	VG attempts with EDL/dpH tests	positive, tests confirmed impact of the stand-alone VG device	due to variation of temperature during the 1st attempt, all measurements with the VG device were performed the second time, the VG device emits weak non-EM emission, see Figs. 7.6-7.9.

2. Biological tests (Y-YFT/YFT) are sensitive to operation of the VG device. Control populations demonstrated inhibited activity of microorganisms (Wi-Fi:on, VG-device: off), whereas the experimental population demonstrated unchanged activity (Wi-Fi:on, VG-device: on). These results can point to a functionality of the VG device, however, they are not statistically significant and demonstrate only a sensitivity to the VG device. We suggest performing further microbiological tests to verify and to validate the functionality of the VG device.
3. All tests with water (EDL, dpH) are not suitable to validate the declared functionality of the VG device because all cases with WiFi and WiFi+VG devices demonstrated a comparable impact. The phyto-tests are conditionally suitable, when the physiological state of a plant will reflect the stress from WiFi access points.

## 5 GENERAL CONDITIONS AND EXPLANATIONS

1. Measurements intend to confirm presence/absence of the unconventional effects from the customer's experimental technology on test physical/biological systems. Any other purpose is not intended.
2. General explanations of the mentioned unconventional effects can be found in [1], [2].
3. Both, the customer and the laboratory, are agreed for non-disclosure of any information, related to the measurements, their results, experimental technology, etc. All data are treated as confidential. The customer is agreed with long-term storage of received data by the laboratory. In case the customer approaches an open-science, or open-access, or any other public dissemination strategy for the obtained results, a separate agreement is required.
4. The laboratory guarantees performing all tests according to specific conditions of unconventional technology by high-qualified personal. The customer's experimental technology is responsible for positive/negative outcomes of the tests.
5. Generally, the laboratory communicates any positive or negative results to the customers as soon as they are obtained. The customer can suggest other experimental conditions, other measurement strategies, etc. to test different aspects the experimental technology.
6. The certificate based on the performed measurements can be issued, however it requires to meet specific conditions related to statistical significance of data, enough iterative measurements in different environments as well as a fulfilment of several other requirements. In this case a separate agreement between the laboratory and the customer is required.
7. The laboratory is in general not responsible for any ethical or legal aspects of customer's experimental technology. The customer should take care of satisfying all legal requirements imposed by the customer's original country on the experimental technology.
8. The performed tests/measurements have in general no issues related to the Amsterdam protocol on animal protection and animal experiments. Tests/measurements do not involve any kinds of human behavioural observation, invasive and non-invasive experimentation, and personal data records; do not involve any kind of localization, tracking or position storing of individuals; do not have any issues on ICT implants; do not have any issues on the personal privacy implications of the intended use or potential use of the outcomes; do not involve any kind of human genetic material; do not use any biological or other samples/emission that can contaminate the environment; do not have any ICT-bio/nano-electronics issues; do not have any direct military applications or misuse potential for terrorist abuse.

## REFERENCES

- [1] S. Kernbach. On metrology of systems operating with 'high-penetrating' emission. *International Journal of Unconventional Science*, 1(2):76–91, 2013.
- [2] S. Kernbach. *Supernatural. Scientific approach (rus)*. Algorithm, Moscow, 2015.
- [3] S. Kernbach. Minimal microbiological experiment. *IJUS*, 6(2):45–54, 2014.
- [4] A.V. Bobrov. *Investigating a field concept of consciousness (rus)*. Orel, Orel University Publishing, 2006.
- [5] S. Kernbach and O. Kernbach. On precise pH and dpH measurements. *IJUS*, 5(2):83–103, 2014.
- [6] S. Kernbach. Replication attempt: Measuring water conductivity with polarized electrodes. *Journal of Scientific Exploration*, 27(1):69–105, 2013.

## 6 APPENDIX

## 7 SETUP AND ENVIRONMENTAL CONDITIONS DURING EXPERIMENTS



Figure 7.1: Two tested VG-Devices, provided by the manufacturer.

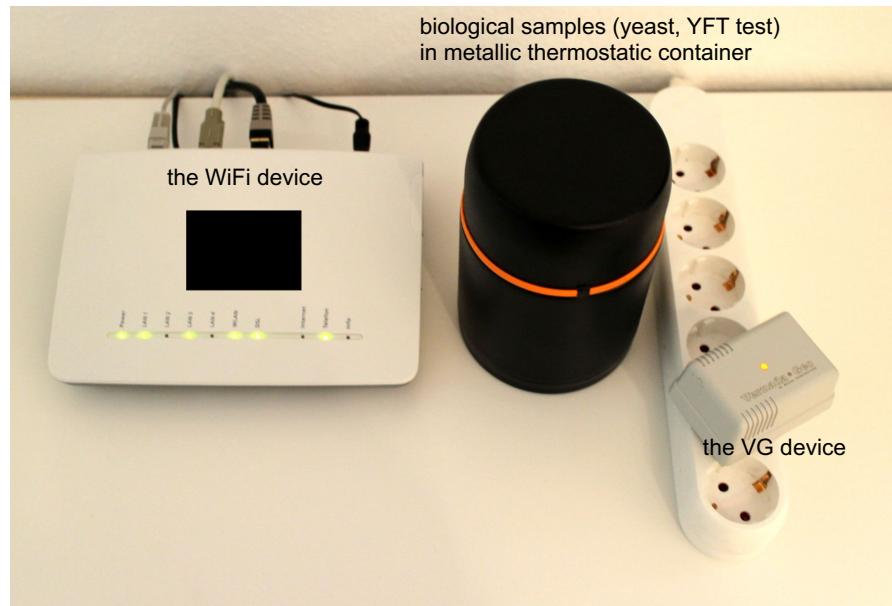


Figure 7.2: Setup of the YFT test.

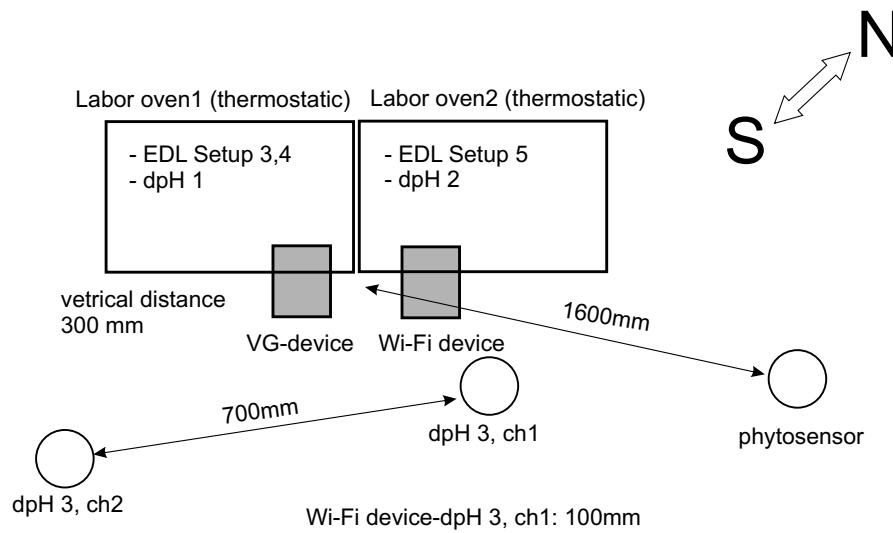


Figure 7.3: Schematic setup of the dpH, EDL and phytosensor tests.

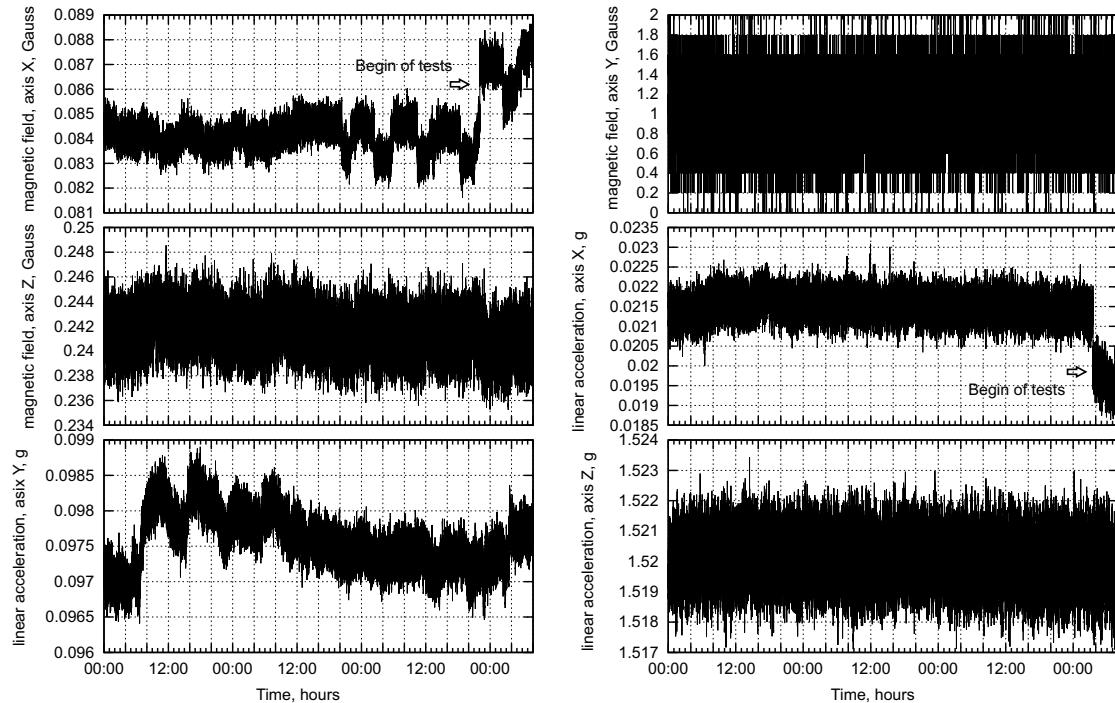


Figure 7.4: General laboratory conditions (mechanical impacts, mag. field) prior and during experiments.

## 7.1 SPECTRA OF ALTERNATING ELECTRIC FIELD 20Hz-1kHz PRODUCED BY THE VG DEVICE

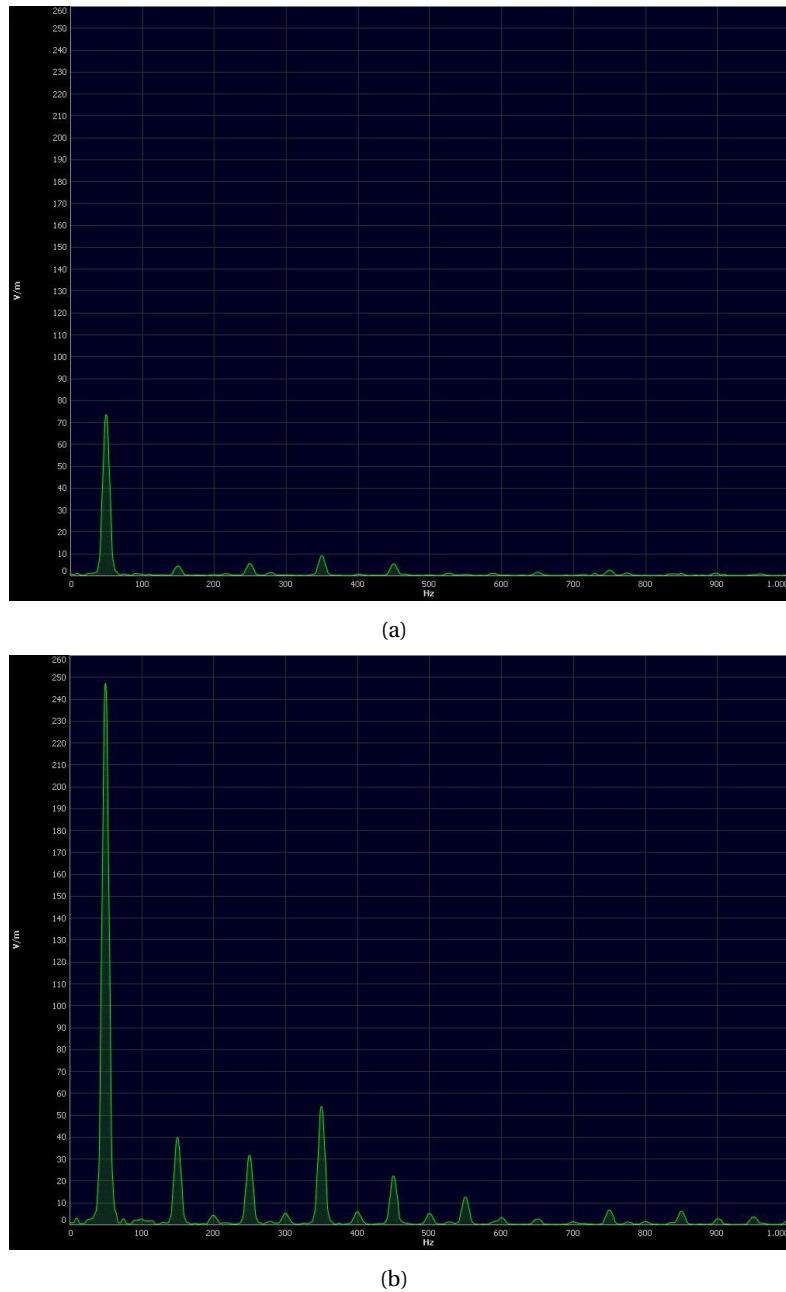


Figure 7.5: Spectra of alternating electric field 20Hz-1kHz measured 20mm close to the VG device by the Spectrum Analyzer Aaronia SPECTRAN NF-5010: (a) the VG device off; (b) VG-device on. These measurements indicated that the VG-device emits a weak alternating electric field with  $f_{main} = 50\text{Hz}$ .

## 7.2 EDL TEST – DC CONDUCTIVITY MEASUREMENTS (THE VG-DEVICE ONLY, 1ST ATTEMPT)

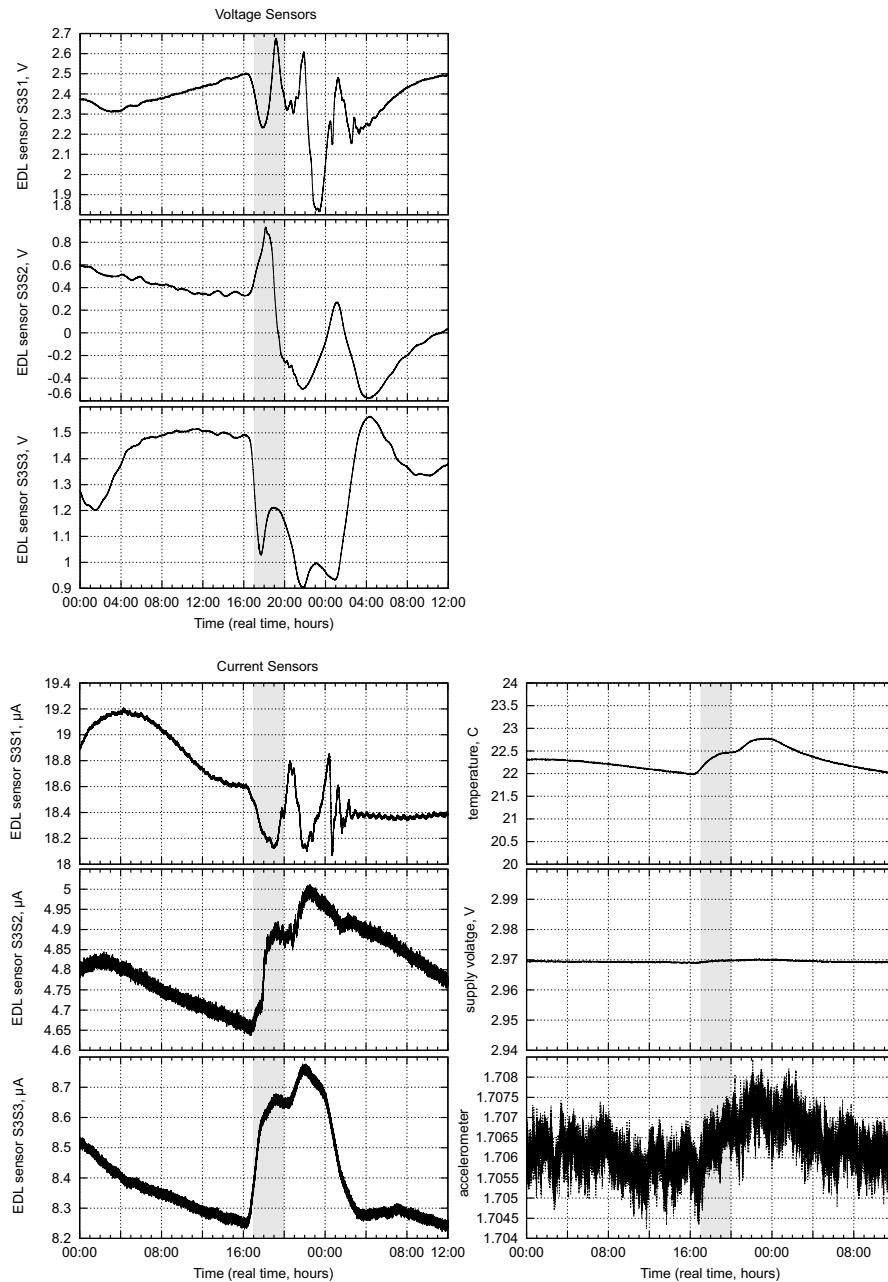
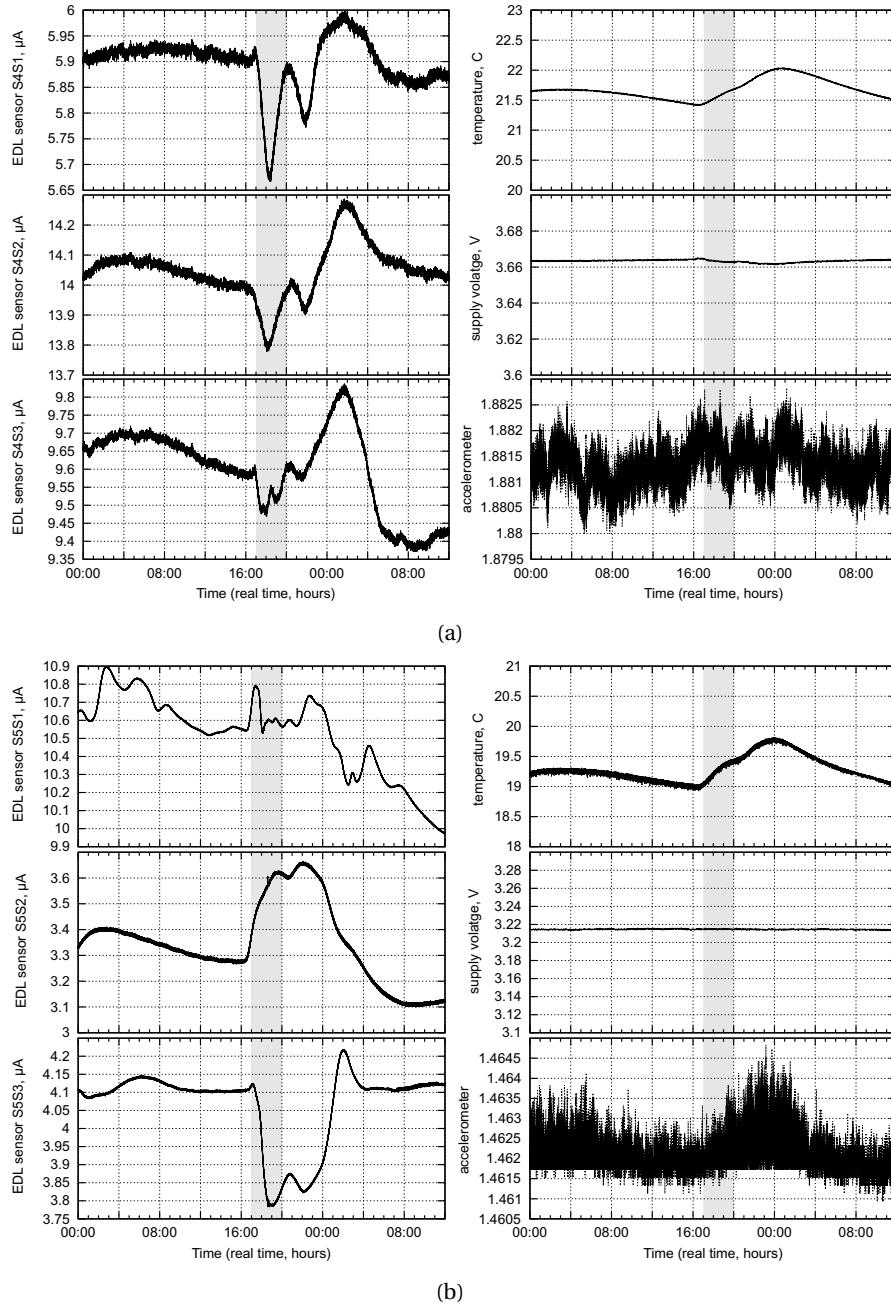


Figure 7.6: EDL Setup 3, the VG device is on, the Wi-Fi is off (the 1st attempt). Reaction of all voltage and current sensors on the VG-device is observed. There is a small variation of temperature (this test is repeated), no mechanical or supply voltage anomalies. The gray region denotes the impact time.



**Figure 7.7: (a) EDL Setup 4, (b) EDL Setup 5, the VG device is on, the Wi-Fi is off (the 1st attempt).**  
 Reaction of all EDL sensors (beside S5S1) on the VG device is observed. There is a small variation of temperature (this test is repeated), no mechanical or supply voltage anomalies. The gray region denotes the impact time.

### 7.3 EDL TEST – DC CONDUCTIVITY MEASUREMENTS (THE VG-DEVICE ONLY, 2ND ATTEMPT)

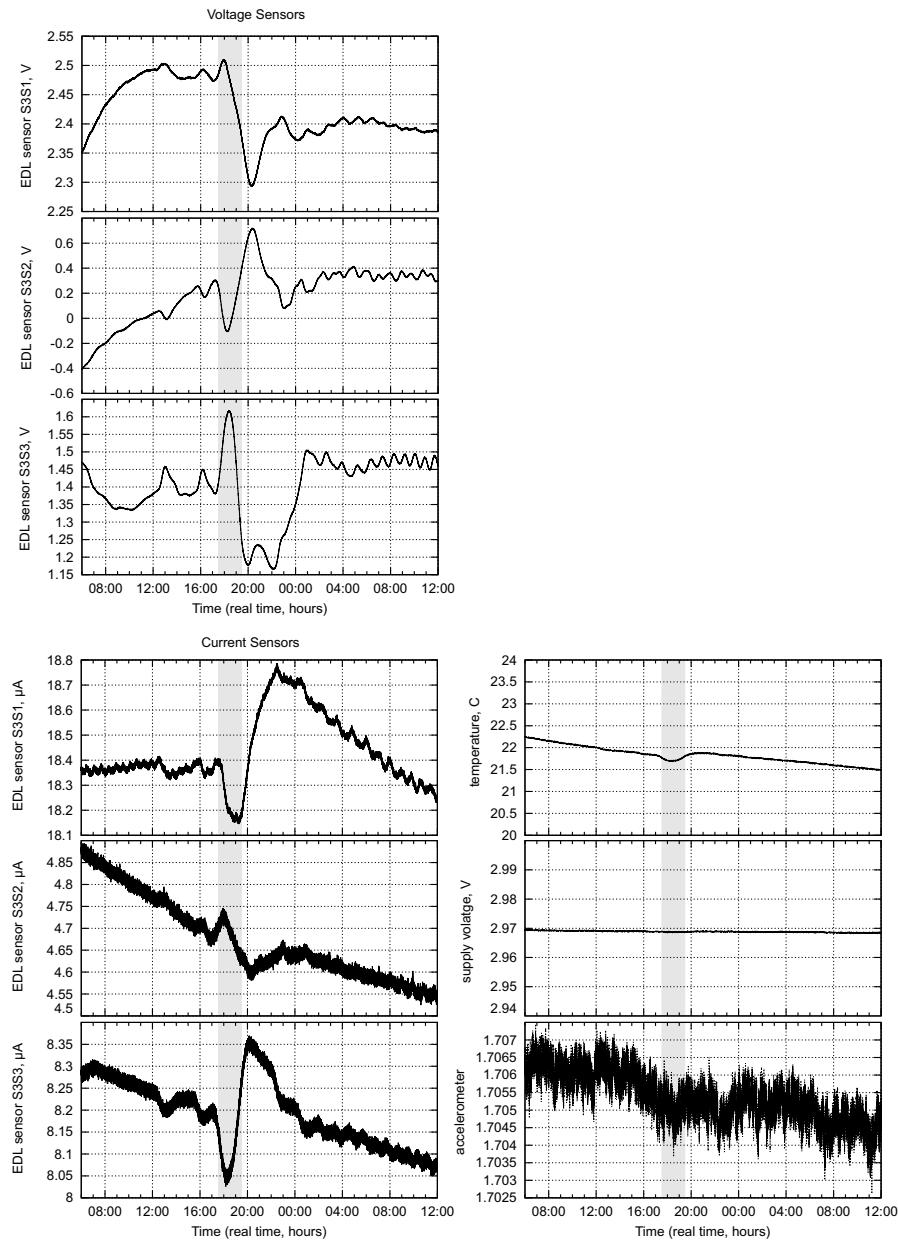


Figure 7.8: EDL Setup 3, the VG-device is on, the Wi-Fi is off (the 2nd attempt). Reaction of all voltage and current sensors on the VG-device is observed. There is a minimal variation of temperature, no mechanical or supply voltage anomalies. The gray region denotes the impact time.

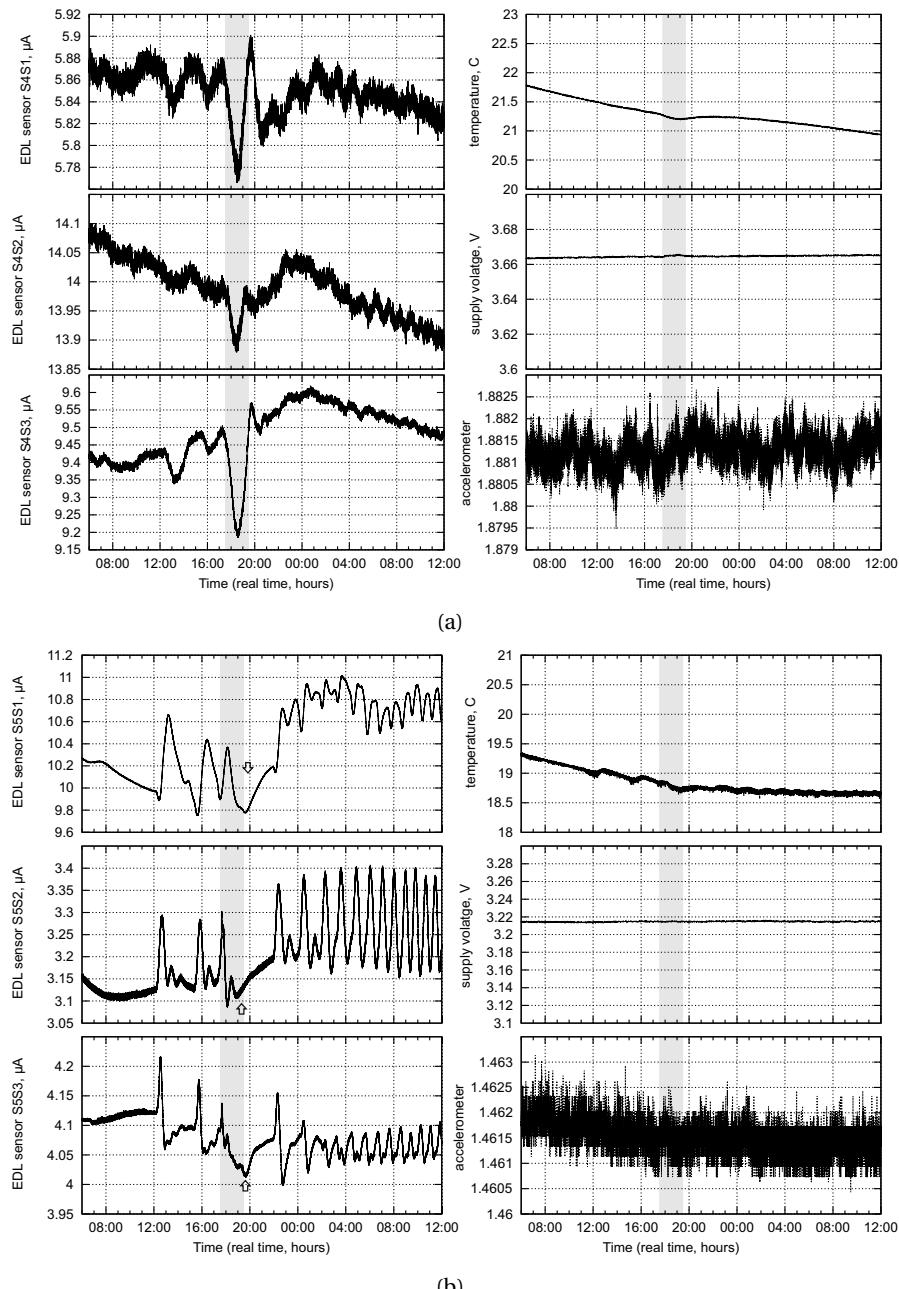


Figure 7.9: (a) EDL Setup 4, (b) EDL Setup 5, the VG device is on, the Wi-Fi is off (the 2nd attempt). Reaction of all EDL sensors on the VG device is observed. There is a minimal variation of temperature, no mechanical or supply voltage anomalies. The gray region denotes the impact time.

#### 7.4 EDL TEST – DC CONDUCTIVITY MEASUREMENTS (THE WiFi DEVICE ONLY)

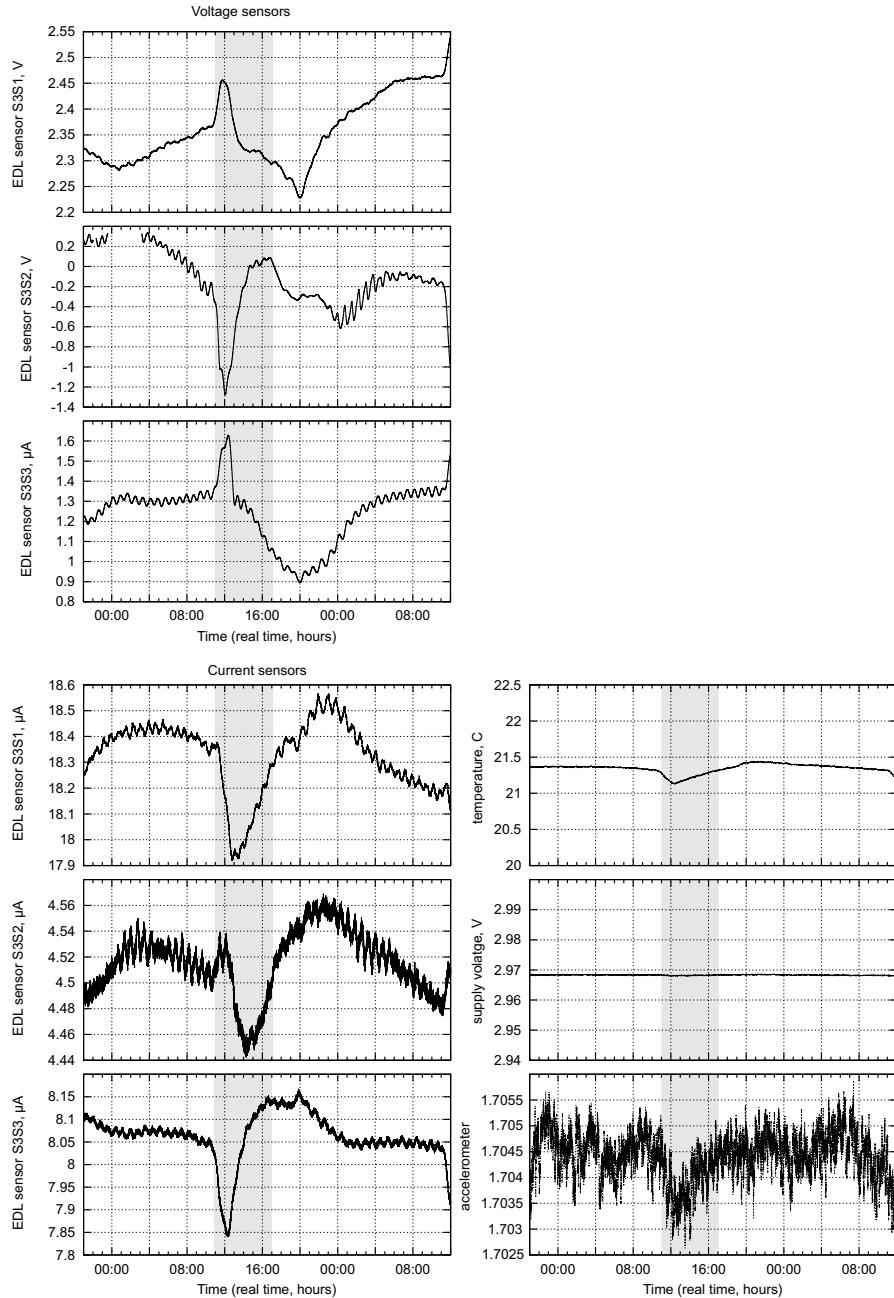


Figure 7.10: EDL Setup 3, the VG-device is off, the Wi-Fi is on. Reaction of all voltage and current sensors on the WiFi device is observed. There is a minimal variation of temperature, no mechanical or supply voltage anomalies. The gray region denotes the impact time.

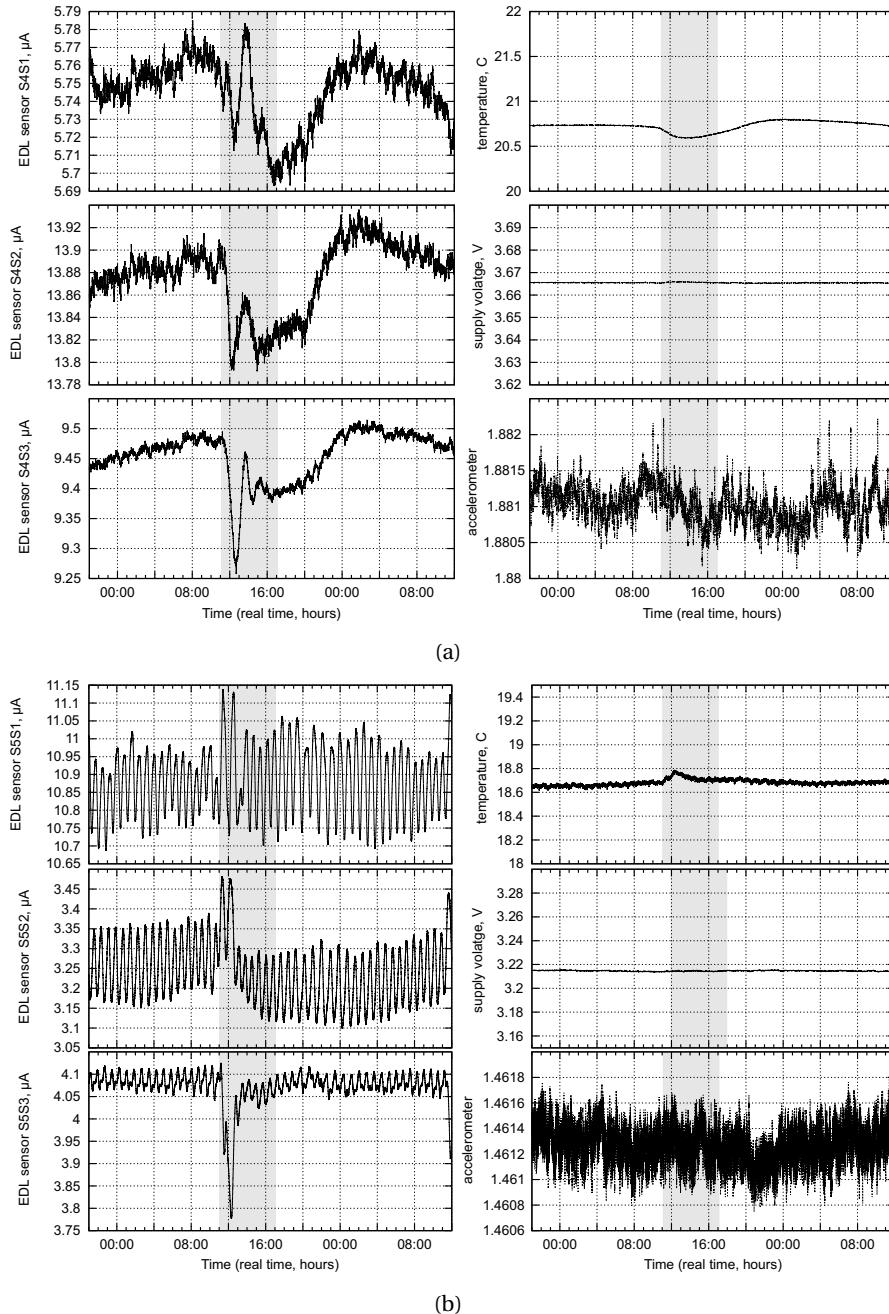


Figure 7.11: (a) EDL Setup 4, (b) EDL Setup 5, the VG device is off, the Wi-Fi is on. Reaction of all EDL sensors on the WiFi device is observed. There is a minimal variation of temperature, no mechanical or supply voltage anomalies. The gray region denotes the impact time.

## 7.5 EDL TEST – DC CONDUCTIVITY MEASUREMENTS (THE WiFi+VG DEVICES)

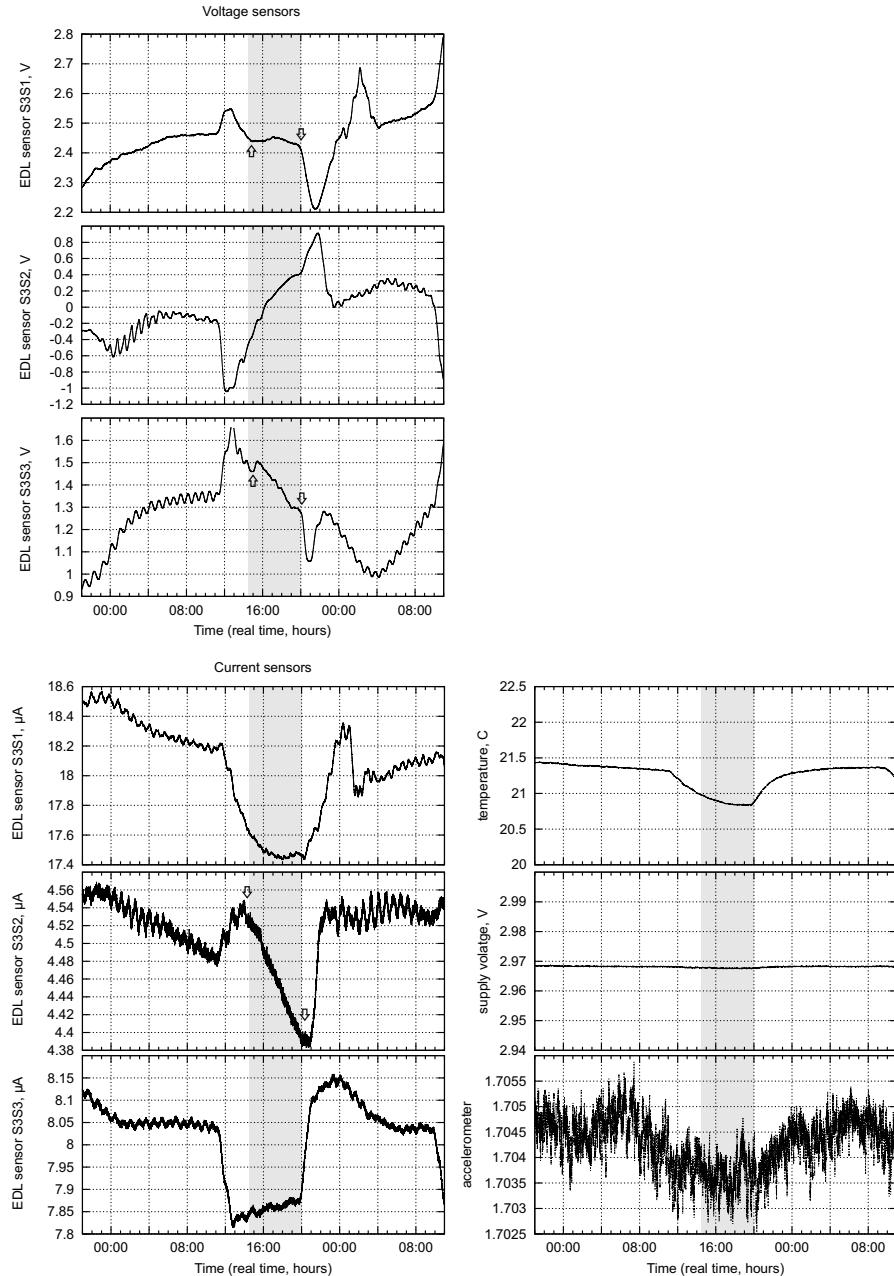


Figure 7.12: EDL Setup 3, the VG-device is on, the Wi-Fi is on. Reaction of 3 voltage and current sensors on the WiFi+VG devices is observed. There is a minimal variation of temperature, no mechanical or supply voltage anomalies. The gray region denotes the impact time.

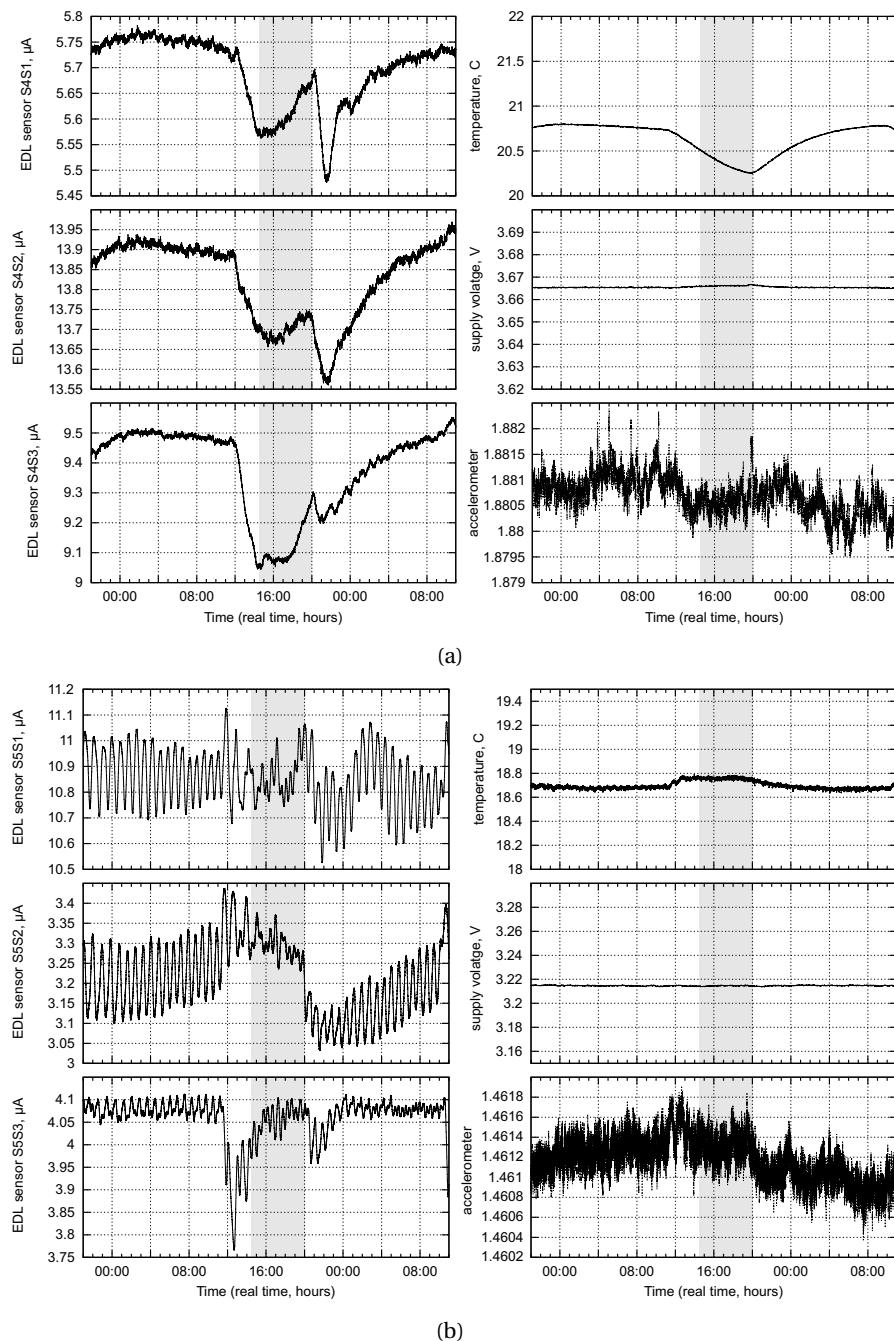


Figure 7.13: (a) EDL Setup 4, (b) EDL Setup 5, the VG device is on, the Wi-Fi is on. Reaction of all EDL sensors on the WiFi+VG devices is observed. There is a minimal variation of temperature, no mechanical or supply voltage anomalies. The gray region denotes the impact time.

## 7.6 PHYTOSENSOR MEASUREMENTS

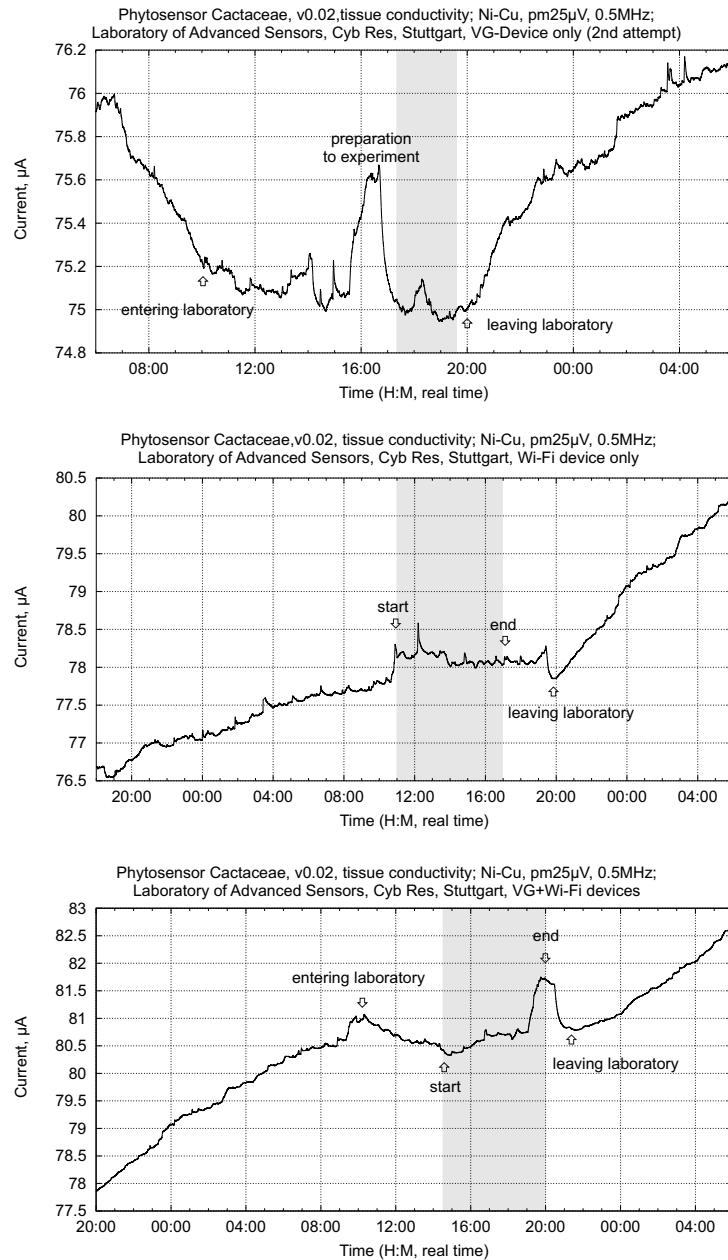


Figure 7.14: Phytosensor *Cactaceae* measurement, the tissue conductivity at 0.5MHz,  $\pm 25\mu$ V with Ni-Cu electrodes. There is no reaction on VG device alone (1.6m away), but an observable reaction in cases of the WiFi device and WiFi+VG devices. The gray region denotes the impact time.

### 7.7 *d*pH MEASUREMENTS (VG DEVICE ONLY, 1ST ATTEMPT)

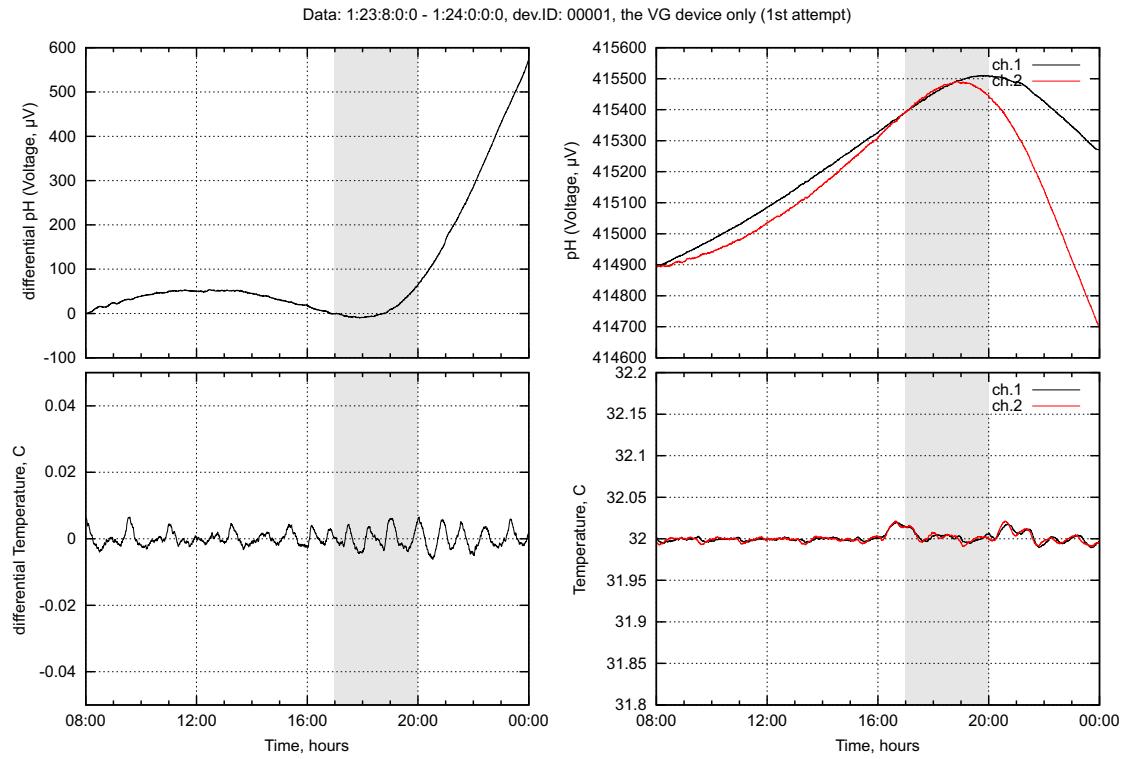


Figure 7.15: *d*pH measurement, the setup 1, the VG device only, the 1st attempt. The gray region denotes the impact time.

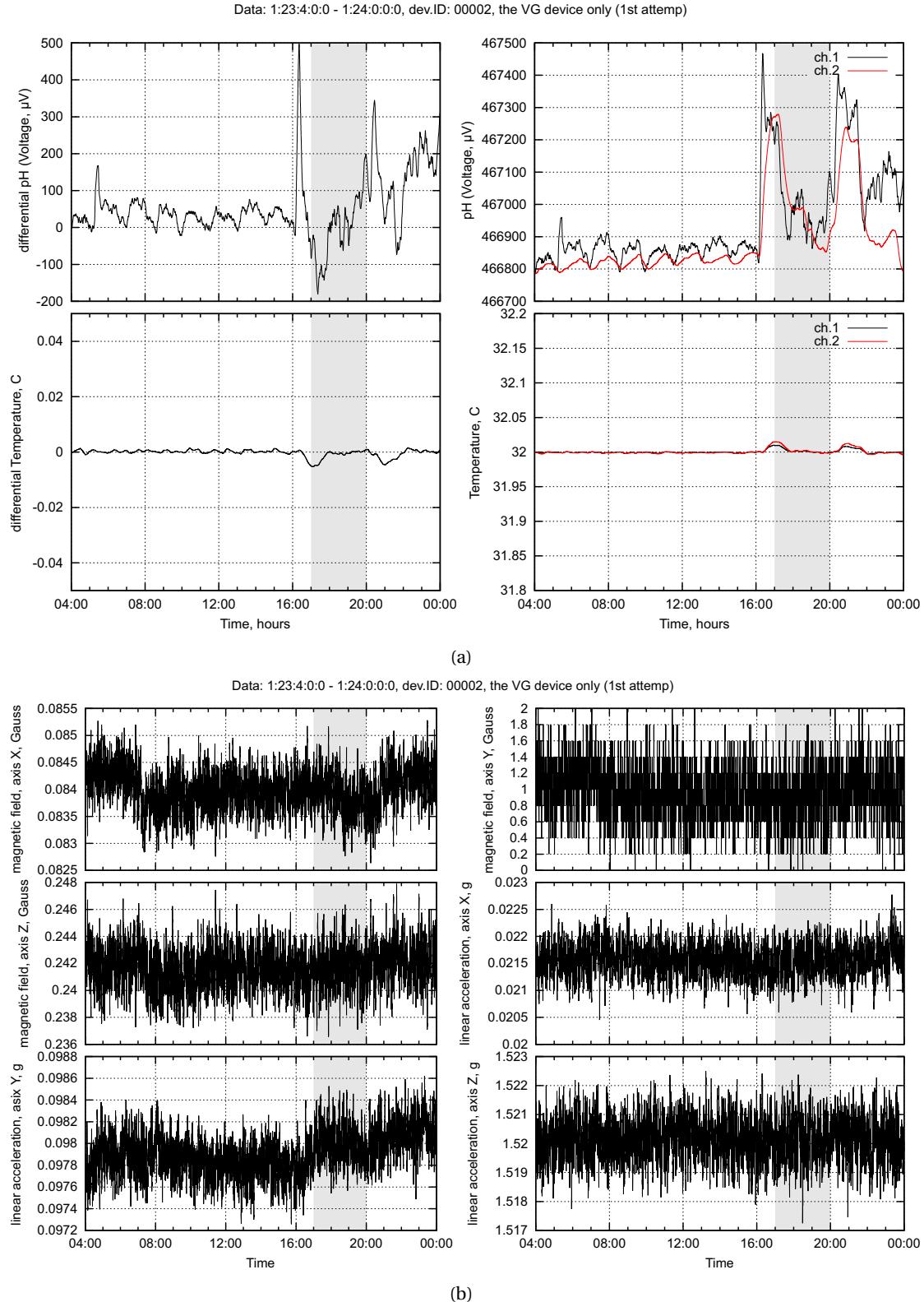


Figure 7.16:  $d\text{pH}$  measurement, the setup 2, the VG device only, the 1st attempt. The gray region denotes the impact time. Large averaging is applied to this  $d\text{pH}$  measurement that displaced an exact impact time.

### 7.8 *d*pH MEASUREMENTS (VG DEVICE ONLY, 2ND ATTEMPT)

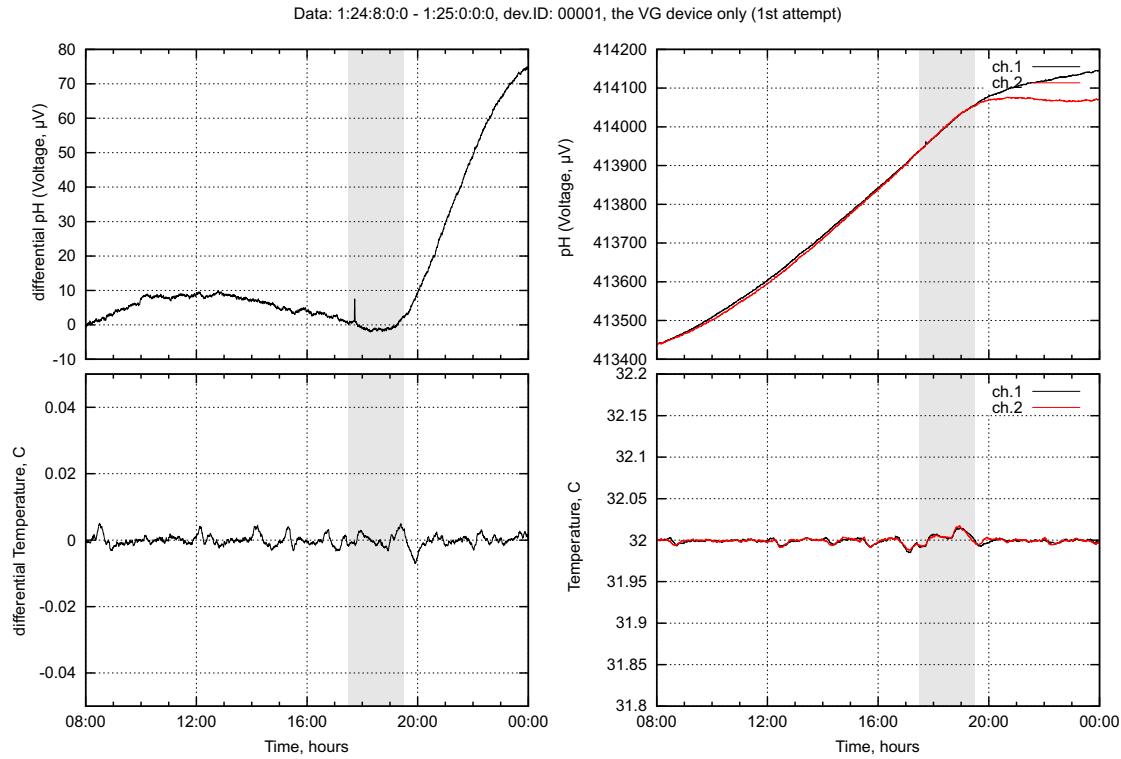


Figure 7.17: *d*pH measurement, the setup 1, the VG device only, the 2nd attempt. The gray region denotes the impact time.

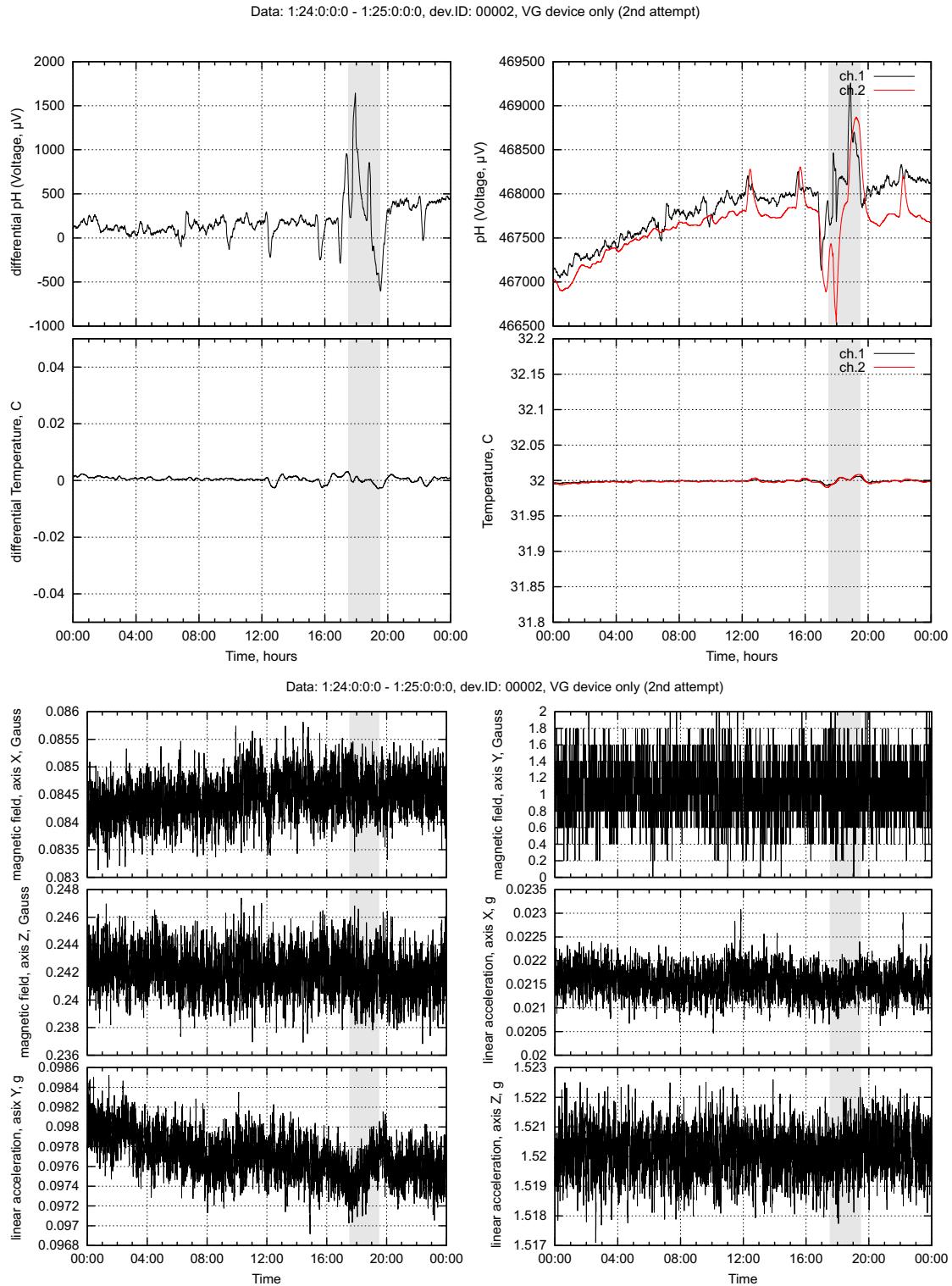


Figure 7.18: *d*pH measurement, the setup 2, the VG device only, the 2nd attempt. The gray region denotes the impact time. Large averaging is applied to this d*pH* measurement that displaced an exact impact time.

## 7.9 $d\text{pH}$ MEASUREMENTS (WiFi DEVICE ONLY)

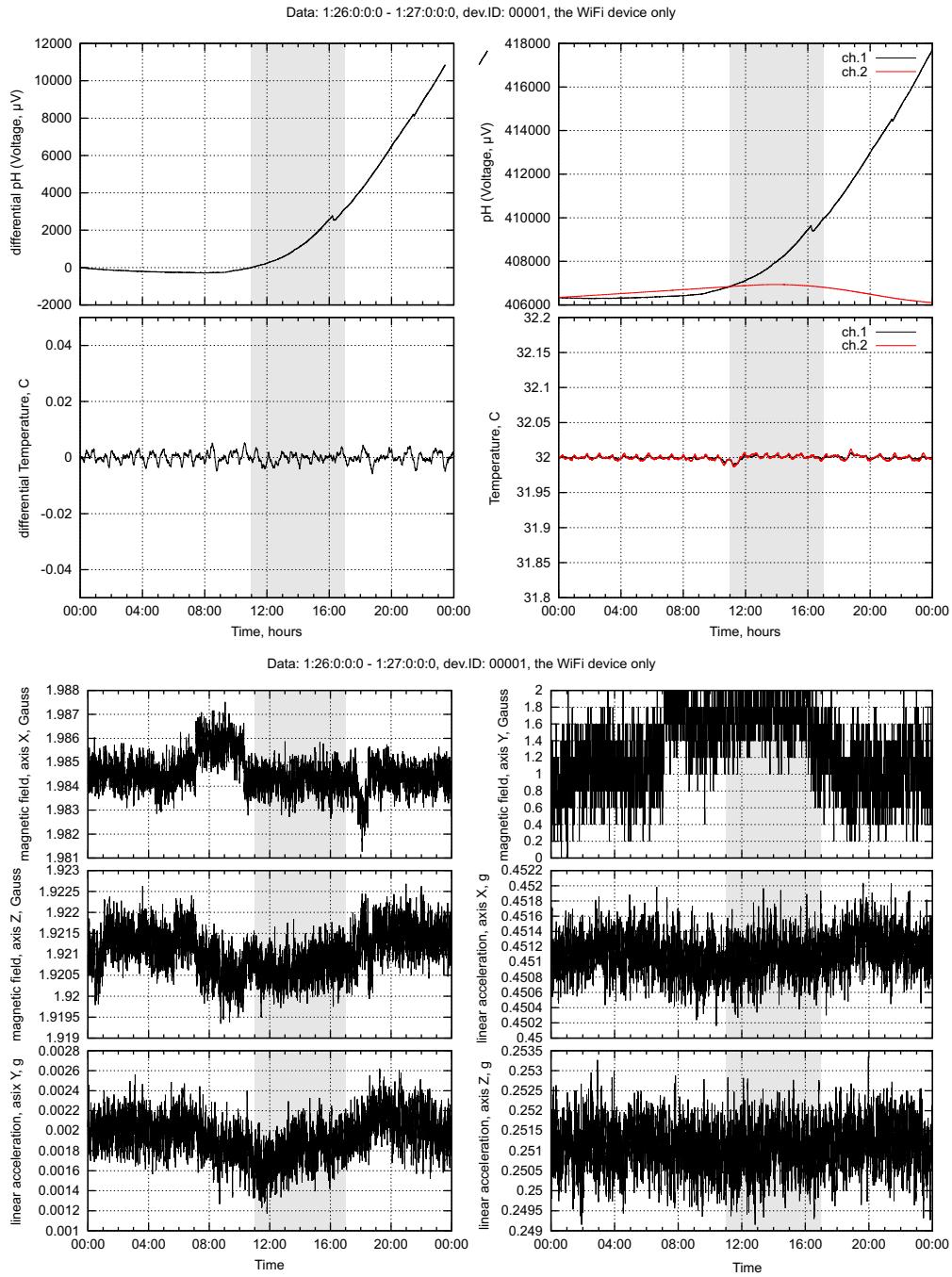


Figure 7.19:  $d\text{pH}$  measurement, the setup 1, the WiFi device only. The gray region denotes the impact time.

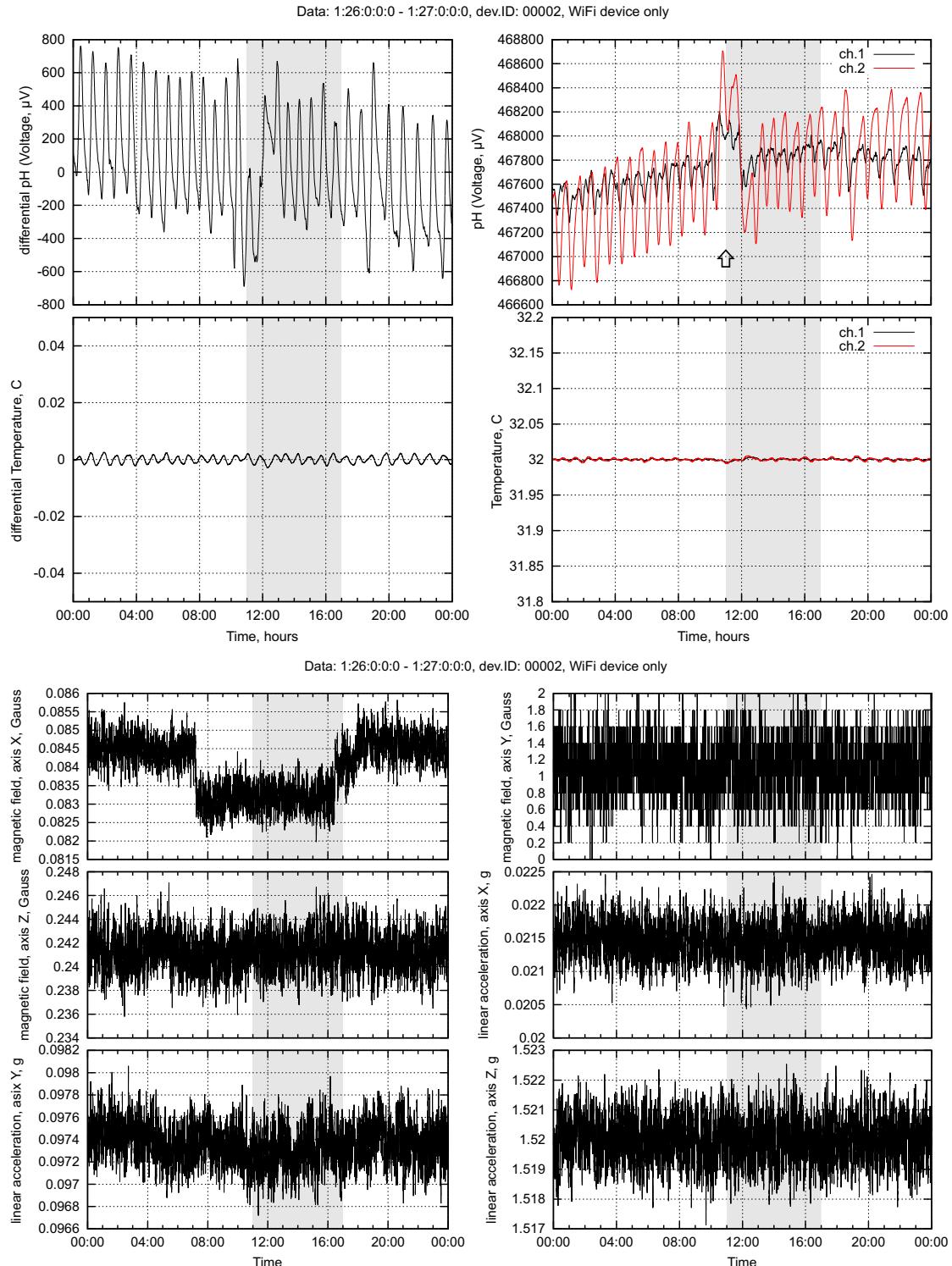


Figure 7.20:  $d\text{pH}$  measurement, the setup 2, the WiFi device only. The gray region denotes the impact time.

### 7.10 *dpH* MEASUREMENTS (WiFi+VG DEVICES)

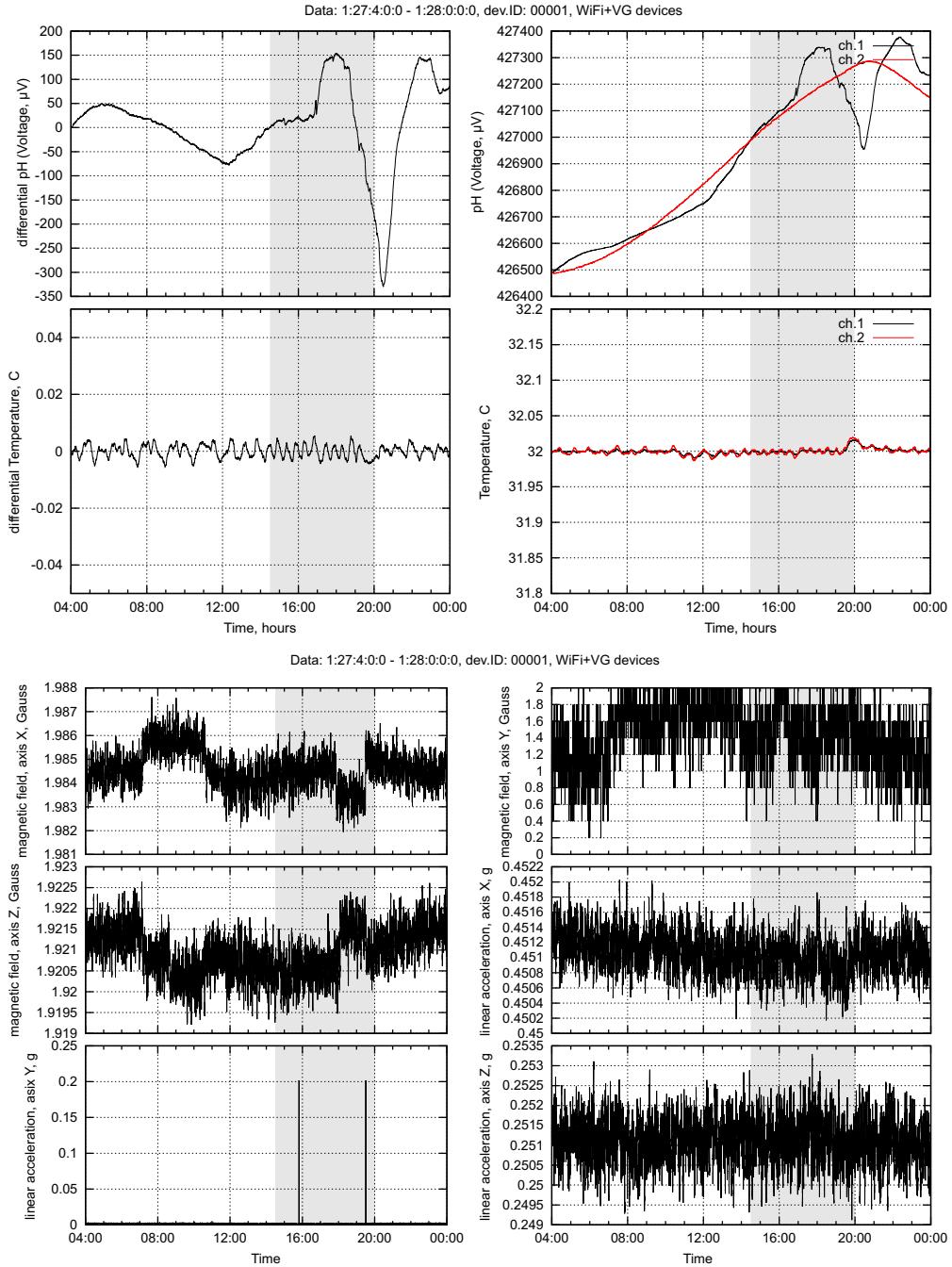


Figure 7.21: *dpH* measurement, the setup 1, WiFi+VG devices. The gray region denotes the impact time.

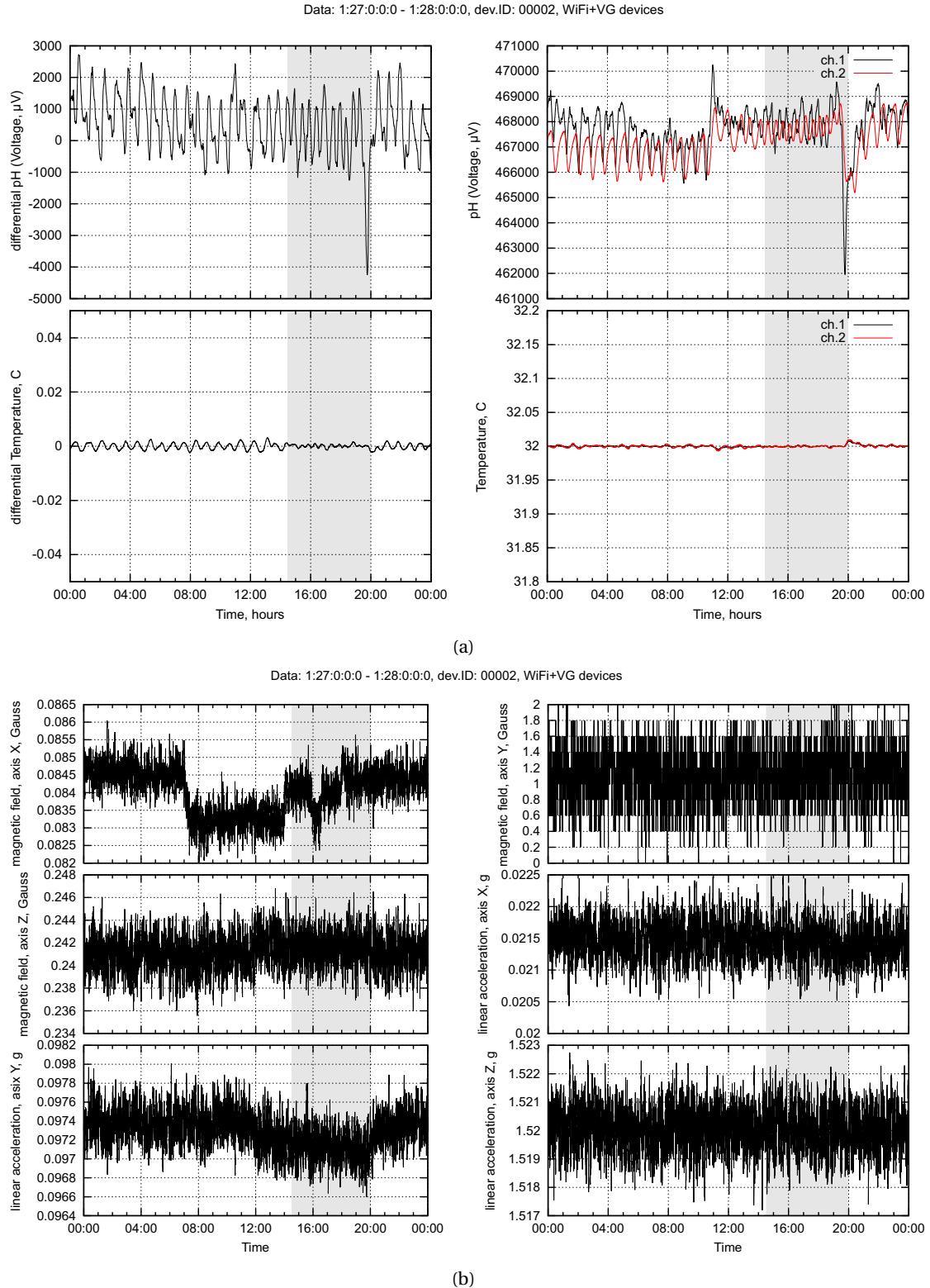


Figure 7.22:  $d\text{pH}$  measurement, the setup 2, WiFi+VG devices. The gray region denotes the impact time.

## 7.11 THE V-YFT TEST

**Table 7.1:** V-YFT test, series N1, experimental and control attempts without and with the VG device.

'Experimental:Control' w/o VG	Duration (Time, sec. * N of Rep.)	'Experimental:Control' with VG	Duration (Time, sec. * N of Rep.)
All blue (271014_V-YFT)		Exp:blue,Con:Green (121114_V-YFT_VerGeo)	
1:0	15*8	0:1	15*43
1:1	15*11	0:2	15*8
2:1	15*4	1:2	15*6
2:2	15	1:3	15*4
2:3	15*6	2:3	15*23
2:4	15*5	2:4	15*20
3:4	15*2	3:4	15*21
4:4	15*9	4:4	15*4
5:4	15	5:4	15*4
5:5	15*11	5:5	15*3
5:6	15*9	5:6	15*11
6:6	15*12	6:6	15*5
7:6	15*3	7:6	15*43
7:7	15*13	7:7	15*34
Experimental:Inhibition		Experimental:Inhibition	

**Table 7.2:** V-YFT test, series N2, experimental and control attempts without and with the VG device.

'Experimental:Control' w/o VG	Duration (Time, sec. * N of Rep.)	'Experimental:Control' with VG	Duration (Time, sec. * N of Rep.)
All green (291014_V-YFT)		Exp:blue,Con:Green (171114_V-YFT_VerGeo)	
0:1	15*4	1:0	15*51
0:2	15*7	2:0	15*4
0:3	15	3:0	15*14
1:3	15*2	4:0	15*7
1:4	15	5:0	15:6
1:5	15	6:0	15
3:5	15	7:1	15*15
4:5	15*8	7:2	15*6
4:6	15*7	7:3	15*34
4:7	15*5	7:4	15:5
5:7	15*5	8:4	15*16
5:8	15*8	8:5	15*13
6:8		8:6	15:6
		8:7	15*16
Experimental:Inhibition		Experimental:Stimulation	

**Table 7.3:** V-YFT test, series N3, experimental and control attempts without and with the VG device.

'Experimental:Control' w/o VG	Duration (Time, sec. * N of Rep.)	'Experimental:Control' with VG	Duration (Time, sec. * N of Rep.)
All red (031114_V-YFT)		Exp:blue,Con:Green (181114_V-YFT_VerGeo)	
1:0	15*2	0:1	15*2
2:0	15	0:2	15*30
3:0	15*5	0:3	15*32
4:0	15	1:3	15*19
4:1	15:4	2:3	15
5:1	15	2:4	15*7
6:1	15	3:5	15
6:2	15	4:5	15*13
6:3	15	5:5	15*10
7:3	15	5:5	15*8
8:4	15*2	5:6	15*8
8:5	15	6:6	15*10
8:6	15*17	7:7	15*51
8:7	15*4	8:7	15*10
Experimental:Stimulation		Experimental:Inhibition	

**Table 7.4:** V-YFT test, series N4, experimental and control attempts without and with the VG device.

'Experimental:Control' w/o VG	Duration (Time, sec. * N of Rep.)	'Experimental:Control' with VG	Duration (Time, sec. * N of Rep.)
All green (041114_V_YFT)		Exp:blue,Con:Green (201114_V-YFT_VerGeo)	
1:0	15*4	0:1	15*10
2:0	15*28	1:1	15*5
3:0	15*3	2:1	15*11
3:1	15	2:2	15*5
3:2	15*7	3:2	15*4
3:3	15*4	3:3	15*2
3:4	15:2	4:3	15
4:4	15*8	5:3	15*7
5:4	15*2	6:3	15*5
6:4	15*6	7:3	15*2
6:5	15*7	7:4	15*5
6:6	15*14	8:4	15*3
7:6	15*44	8:5	15*10
7:7	15	8:6	15*4
7:8	8:7 15*5		
Experimental:Stimulation		Experimental:Stimulation	

Table 7.5: V-YFT test, series N5, experimental and control attempts without and with the VG device.

'Experimental:Control' w/o VG All green (051114_V-YFT)	Duration (Time, sec. * N of Rep.)	'Experimental:Control' with VG Exp:blue,Con:Green (251114_V-YFT_VerGeo)	Duration (Time, sec. * N of Rep.)
0:1	15*4	1:0	15*6
0:2	15*4	2:0	15*2
1:2	15*26	3:0	15*2
1:3	15	4:0	15*3
1:4	15*12	5:0	15*14
2:4	15*10	5:1	15
3:4	15*15	5:2	15*11
3:5	15*13	5:3	15*4
4:5	15:14	6:3	15*11
4:6	15*10	6:4	15*5
6:6	15*10	7:4	15*14
7:6	15*72	7:5	15*8
7:7		7:6	15*26
		8:6	15*18
		8:7	15*47
Experimental:Inhibition		Experimental:Stumulation	

Table 7.6: V-YFT test, series N6 &amp; N7, control attempts only without the VG device.

'Experimental:Control' w/o VG, All green (061114_V-YFT) N6	Duration (Time, sec. * N of Rep.)	'Experimental:Control' w/o VG, Exp:blue,Con:Green (111114_V_YFT) N7	Duration (Time, sec. * N of Rep.)
0:1	15*30	0:1	15*33
1:1	15	0:2	15*7
2:1	15	0:3	15*14
3:1	15*16	1:3	15*7
4:1	15*4	2:3	15*11
4:2	15*17	2:4	15*18
5:2	15*20	3:4	15*4
6:2	15*8	3:5	15*2
7:2	15*3	4:5	15*36
7:3	15:17	4:6	15*49
7:5	15*14	5:6	15*14
8:5	15*8	6:6	15*60
8:6		7:6	15*68
Experimental:Stumulation		Experimental:Inhibition	

Table 7.7: Concluding table for the V-YFT Test, NoP – N of populations.

	w/o VG	N of at- tempts	weighted	NoP	with VG	N of At- tempts	weighted	NoP
Inhibition	4	7	0.57	112	2	5	0.4	80
Stimulation	3	7	0.43	112	3	5	0.6	80
Inhib./Stim. weighted			1.33	224				0.67 160