
Test report No. 06/0014-00

Manufacturer : GETRONIC S.r.l.,
I-21026 Gavirate (VA)

Type : GT904



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TEST REPORT

No. 06/0014-00

issued by

FAKT S.r.l.

Via Lithos, 53 I-25086 Rezzato (BS)

(Tests according to relevant requests of VW 801 01 dated June 2005)

1. General information's

- | | |
|--|--|
| 1.0. <u>Equipment under test:</u> | Vehicle Alarm System with radio siren |
| 1.1. <u>Trade mark:</u> | GT ALARM |
| 1.2. <u>Type:</u> | GT904 |
| 1.2.1. Versions: | one: GT904 |
| 1.3. <u>Identification:</u> | GT904 |
| 1.3.1. Series number: | - |
| 1.4. <u>Manufacturer's name and address:</u> | GETRONIC S.r.l.
Via Calcinatè, 12
21026 Gavirate (VA)
Italy |
| 1.5. <u>Date of receipt of the test object:</u> | sample 1 - 6 : 21.03.2006 |
| 1.6. <u>Customer represented during the test by the following person(s):</u> | none |
| 1.7. <u>Remarks:</u> | - |

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2. Test sequence:

The customer Getronic S.r.l. has requested the following test sequence according to standard VW 801 01: 2005-06

- Low temperature operation
- Superimposed alternating voltage
- Reset behavior at voltage dip
- High temperature operation
- Temperature cycle with specified speed of change
- Overvoltage protection during long-term operation
- Overvoltage protection during short-term operation
- Slow decrease and increase of supply voltage
- Short circuit protection
- Mechanical shock test for body systems/components
- Fatigue limit
- Reversed polarity protection
- Sealing against dust and spray water
- Humid heat, cyclic
- Thermal shock
- Thermal shock test
- Drop test

The tests were carried out on 21.03.2006 – 12.04.2006 with the following test sample :

Type:	GT904
Version:	GT904
Sample:	1 - 6
Manufacturer:	GETRONIC S.r.l. I - 21026 Gavirate (VA)

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2.1 Low temperature operation:

- 2.1.1 Method of measurement: Test carried out according to the method described in the norm VW 801 01: 2005-06 section 5.1.2; the sample has been submitted at low temperature $T_{UB} = -40^{\circ}\text{C}$ for 24h
- 2.1.2 Performance criteria: All functions of the sample shall work properly during and after the test (criterion A)
- 2.1.3 Test results: The sample worked properly during and after the test
- 2.1.4 Date of test: 21. – 22.03.2006
- 2.1.5 Place of test: FAKT S.r.l. - Italy
- 2.1.6 Remarks: -
- 2.1.7 Test sample: 2

2.2 Superimposed alternating voltage:

- 2.2.1 Method of measurement: Test carried out according to the method described in the norm VW 801 01:2005-06 section 3.12: the following alternating voltage superimposed had been applied to the test sample for 10min:
- test voltage: 13V
 - amplitude: 1V
 - internal res. of source: $\leq 100\text{m}\Omega$
 - frequency range: 50Hz-20kHz
 - type of sweep: triangular
 - sweep duration: 2min
- 2.2.2 Performance criteria: All functions of the sample shall work properly during and after the test (criterion A)
- 2.2.3 Test results: The sample worked properly during and after the test

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- 2.2.4 Date of test: 23.03.2006
- 2.2.5 Place of test: Senton Gmbh - Germany
- 2.2.6 Remarks: -
- 2.2.7 Test sample: 1
- 2.3 Reset behavior at voltage dip:
- 2.3.1 Method of measurement: Test carried out according to the method described in the norm VW 801 01:2005-06 section 3.14; for more details, see enclosure 1 (1 page)
- 2.3.2 Performance criteria: Applicable criteria A within the operating voltage range; applicable criteria C outside the operating voltage range
- 2.3.3 Test results: The sample worked properly during and after the test
- 2.3.4 Date of test: 23.03.2006
- 2.3.5 Place of test: Senton GmbH - Germany
- 2.3.6 Remarks: -
- 2.3.7 Test sample: 1
- 2.4 High temperature operation:
- 2.4.1 Method of measurement: Test carried out according to the method described in the norm VW 801 01: 2005-06 section 5.1.3; the sample has been submitted at high temperature $T_{oB} = 70^{\circ}\text{C}$ for 96h
- 2.4.2 Performance criteria: All functions of the sample shall work properly during and after the test (criterion A)

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- 2.4.3 Test results: The sample worked properly during and after the test
- 2.4.4 Date of test: 23.-27.03.2006
- 2.4.5 Place of test: FAKT S.r.l. - Italy
- 2.4.6 Remarks: -
- 2.4.7 Test sample: 2

2.5 Temperature cycle with specified speed of change:

- 2.5.1 Method of measurement: Test carried out according to the method described in the norm VW 801 01: 2005-06 section 5.2.1; for more details, see enclosure 2 (1 page)
- 2.5.2 Performance criteria: Applicable criteria A for all functions with operating type 3.2 and applicable criteria C for all functions with operating type 1.2.
- 2.5.3 Test results: The sample worked properly during and after the test
- 2.5.4 Date of test: 24.03.2006 - 03.04.2006
- 2.5.5 Place of test: FAKT S.r.l. - Italy
- 2.5.6 Remarks: -
- 2.5.7 Test sample: 5

2.6 Overvoltage protection during long-term operation:

- 2.6.1 Method of measurement: Test carried out according to the method described in the norm VW 801 01: 2005-06 section 3.10; the test voltage of 17V has been applied to all voltage inputs for 60min in an environmental temperature $T_{OB} = -20^{\circ}\text{C}$

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- 2.6.2 Performance criteria: Applicable criteria A for all functions necessary for driving operation; at least applicable criteria C for all remaining functions
- 2.6.3 Test results: The sample worked properly during and after the test
- 2.6.4 Date of test: 24.03.2006
- 2.6.5 Place of test: FAKT S.r.l. - Italy
- 2.6.6 Remarks: -
- 2.6.7 Test sample: 6
- 2.7 Overvoltage protection during short-term operation:
- 2.7.1 Method of measurement: Test carried out according to the method described in the norm VW 801 01:2005-06 section 3.11: the test voltage of 26V has been applied to all voltage inputs for 60sec
- 2.7.2 Performance criteria: Applicable criteria A for all functions necessary for driving operation; at least applicable criteria C for all remaining functions
- 2.7.3 Test results: The sample worked properly during and after the test
- 2.7.4 Date of test: 24.03.2006
- 2.7.5 Place of test: FAKT S.r.l. - Italy
- 2.7.6 Remarks: -
- 2.7.7 Test sample: 6

2.8 Slow decrease and increase of supply voltage:

- 2.8.1 Method of measurement: Test carried out according to the method described in the norm VW 801 01:2005-06 section 3.13; a slow discharging and charging has been applied to the battery with following specifications:
- voltage decrease from +15V to 0 V
- voltage increase from 0 V to +15V
- voltage change: $0,5 \pm 0,1$ V/min
- 2.8.2 Performance criteria: Applicable criteria A within the operating voltage range; applicable criteria C outside the operating voltage range
- 2.8.3 Test results: The sample worked properly during and after the test
- 2.8.4 Date of test: 27. – 28.03.2006
- 2.8.5 Place of test: FAKT S.r.l. - Italy
- 2.8.6 Remarks: -
- 2.8.7 Test sample: 4

2.9 Short circuit protection:

- 2.9.1 Method of measurement: Test carried out according to the method described in the norm VW 801 01:2005-06 section 3.15: the inputs and outputs (without load circuit) have been short-circuit-proof at 14V for 60sec
- 2.9.2 Performance criteria: All functions of the sample shall work properly after the test (criterion C)
- 2.9.3 Test results: The sample worked properly after the test
- 2.9.4 Date of test: 29.03.2006

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2.9.5 Place of test: FAKT S.r.l. – Italy

2.9.6 Remarks: -

2.9.7 Test sample: 4

2.10 Mechanical shock test for body systems/components:

2.10.1 Method of measurement: Test carried out according to the method described in the norm VW 801 01:2005-06 section 4.2.2; the following shock vibration has been applied to the test sample:

- pulse: half sinus
- requirements: 500m/s^2 , 6ms
- direction: same direction as installed in the vehicle
- no. of pulses: 10

2.10.2 Performance criteria: All functions of the sample shall work properly during and after the test (criterion A)

2.10.3 Test results: The sample worked properly during and after the test

2.10.4 Date of test: 28.03.2006

2.10.5 Place of test: FAKT S.r.l. - Italy

2.10.6 Remarks: -

2.10.7 Test sample: 2

2.11 Fatigue limit:

2.11.1 Method of measurement: Test carried out according to the method described in the norm VW 801 01:2005-06 section 4.1.4; for more details, see enclosure 3 (1 page)

2.11.2 Performance criteria: All functions of the sample shall work properly during and after the test (criterion A)

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2.11.3 Test results: The sample worked properly during and after the test

2.11.4 Date of test: 28.-30.03.2006

2.11.5 Place of test: FAKT S.r.l. - Italy

2.11.6 Remarks: -

2.11.7 Test sample: 2

2.12 Reversed polarity protection:

2.12.1 Method of measurement: Test carried out according to the method described in the norm VW 801 01:2005-06 section 3.8; a test voltage of 14V with reversed polarity has been applied to all voltage inputs for 60sec

2.12.2 Performance criteria: All functions of the sample shall work properly after the test. Exchange of defective fuses is permissible (criterion D)

2.12.3 Test results: All functions work properly after the test. No fuse failed

2.12.4 Date of test: 03.04.2006

2.12.5 Place of test: FAKT S.r.l. - Italy

2.12.6 Remarks: -

2.12.7 Test sample: 4

2.13 Sealing against dust and spray water:

2.13.1 Method of measurement: Test carried out according to the method described in the norm VW 801 01:2005-06 section 5.5.1 and based on DIN 40 050-9 (type protection IP5K0)

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- 2.13.2 Performance criteria: All functions of the sample shall work properly after the test (criterion C)
- 2.13.3 Test results: All functions work properly after the test. No massive presence of dust inside the sample housing
- 2.13.4 Date of test: 03.04.2006
- 2.13.5 Place of test: FAKT S.r.l. - Italy
- 2.13.6 Remarks: -
- 2.13.7 Test sample: 6
- 2.14 Humid heat, cyclic:
- 2.14.1 Method of measurement: Test carried out according to the method described in the norm VW 801 01:2005-06 section 5.5.2 and based on DIN EN 60068-2-30, test Dd, type 1 and following characteristic:
- max. temperature: +55°C
- no. of cycles: 6
- 2.14.2 Performance criteria: All functions of the sample shall work properly during and after the test (criterion A)
- 2.14.3 Test results: The sample worked properly during and after the test
- 2.14.4 Date of test: 4.-10.04.2006
- 2.14.5 Place of test: FAKT S.r.l. - Italy
- 2.14.6 Remarks: -
- 2.14.7 Test sample: 1

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2.15 Thermal shock:

- 2.15.1 Method of measurement: Test carried out according to the method described in the norm VW 801 01:2005-06 section 5.6.2; for more details, see enclosure 4 (1 page)
- 2.15.2 Performance criteria: All functions of the sample shall work properly during and after the test (criterion A)
- 2.15.3 Test results: The sample worked properly during and after the test
- 2.15.4 Date of test: 06.04.2006
- 2.15.5 Place of test: FAKT S.r.l. - Italy
- 2.15.6 Remarks: -
- 2.15.7 Test sample: 4

2.16 Thermal shock test:

- 2.16.1 Method of measurement: Test carried out according to the method described in the norm VW 801 01:2005-06 section 5.2.2; for more details, see enclosure 5 (1 page)
- 2.16.2 Performance criteria: All functions of the sample shall work properly after the test (criterion C)
- 2.16.3 Test results: The sample worked properly after the test
- 2.16.4 Date of test: 06-12.04.2006
- 2.16.5 Place of test: FAKT GmbH - Germany
- 2.16.6 Remarks: -
- 2.16.7 Test sample: 5

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2.17 Drop test:

2.17.1 Method of measurement:

Test carried out according to the method described in the norm VW 801 01: 2005-06 section 4.3 and based on DIN EN 60068-2-32

- no. of drops: 2
- drop height: 1 m

2.17.2 Performance criteria:

All functions of the sample shall work properly after the test (criterion C); there shall be no observed cracking or rupture of parts of the device.

2.17.3 Test results:

Upon completion of the test, all functions work properly and no mechanical failures are visible.

2.17.4 Date of test:

12.04.2006

2.17.5 Place of test:

FAKT S.r.l. - Italy

2.17.6 Remarks:

-

2.17.7 Test sample:

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3. Summary:

After the tests all the tested samples work correctly as designed

4. Enclosures:

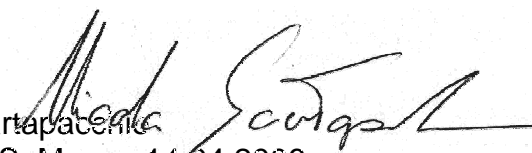
1 – 5 Test protocol (5 pages)

The test results indicated in this test report refer exclusively to the equipment under test. It is not permitted to transfer the results to other systems or configurations.

The publication or duplication of this test report with enclosures, or Part of this test report with enclosures, without a written consent of the test laboratory is not permitted.

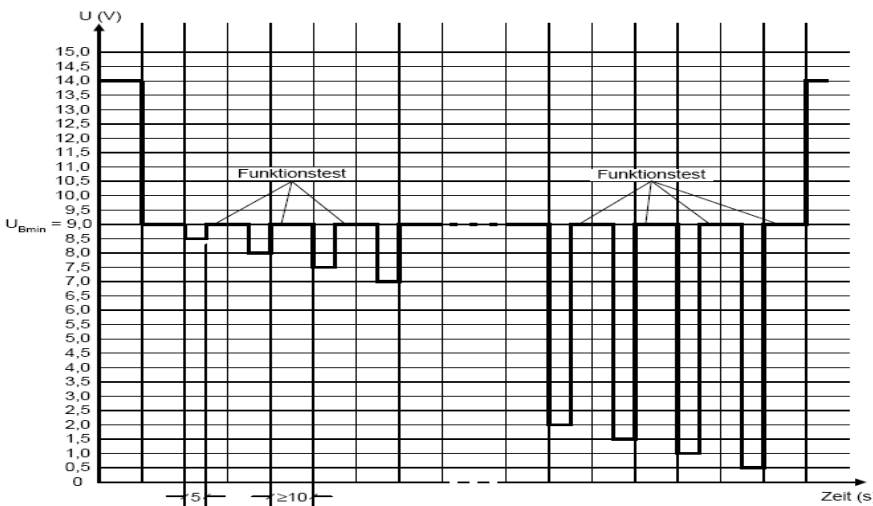
This report includes 13 pages and the enclosures from 1 to 5

The Responsible for the tests


N. Scarpato
Ponte S. Marco, 14.04.2006
cg/ns

Test protocol
Reset behaviour at voltage dip

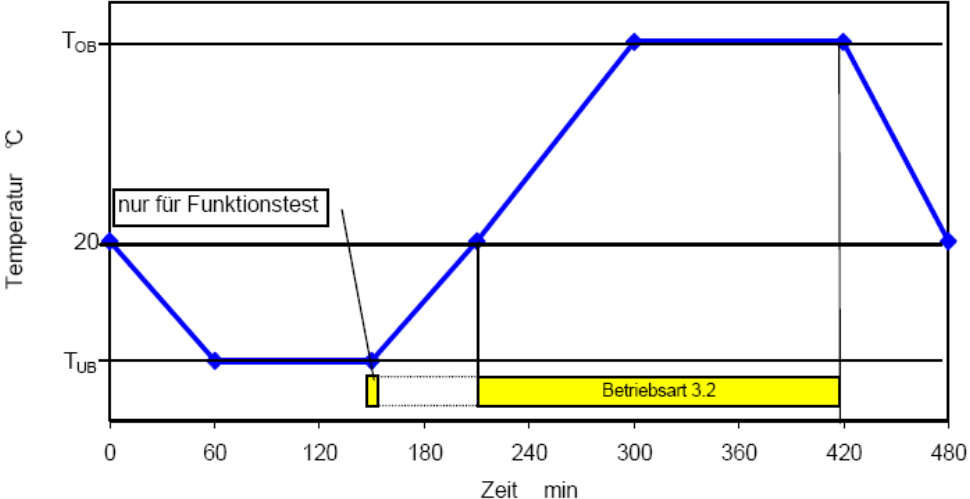
Model:	GT 904	
Applicant:	Getronic s.r.l.	
Sample no.:	1	
Environmental conditions:	Bar. pressure:	1018 hPa
	Ambient temperature:	20 °C
	Relative humidity:	45 %
Mode of operation:	+15 on	
Regulation(s):	VW 801 01: 2005 06 section 3.14	
Coupling mode:	coupling onto supply line	
Severity level:	Pulse: Voltage dip	
$U_{b=}$	14.0V	
$U_{bmin=}$	9.0V	$t_{U_{bmin}=}$ 10 s
$U_{bmin=}$	9.0V	$t_1 = 5s$



The graph plots voltage U (V) on the y-axis (0 to 15.0) against time (s) on the x-axis. The voltage is constant at 14.0V until it drops to 9.0V. The dip duration is 10 seconds. During this dip, there are two 'Funktionstest' periods. The voltage then recovers to 14.0V. The x-axis has markers for 5s and ≥10s.

Performance criteria:	Criterion A within the operating voltage range Criterion C outside the operating voltage range
Test result:	The sample worked properly during and after the test within and outside the operating range
Classification:	Test passed
Date of test:	23.03.2006
Tested by:	Reinhold Markl

Test protocol
Temperature cycle with specified speed of change

Model:	GT 904
Applicant:	Getronic s.r.l.
Sample no.:	5
Mode of operation:	+15 during the following description (see graph)
Regulation(s):	VW 801 01: 2006 06 section 5.2.1
Specifications:	
<u>Thermal cycle test sequence:</u>	
The test sample has been subjected to the following cycle for 30 times with $T_{UB} = -40^{\circ}\text{C}$ and $T_{OB} = +70^{\circ}\text{C}$	
Temperaturprofil	
	
Performance criteria:	Criterion A for operating type 3.2 Criterion C for operating type 1.2
Test result:	The sample worked properly during and after the test
Classification:	Test passed
Date of test:	24.03.2006 – 03.04.2006
Tested by:	N. Scartapacchio



**Test protocol
Fatigue limit (random vibration)**

Model:	GT 904			
Applicant:	Getronic s.r.l.			
Sample no.:	2			
Environmental conditions:	Bar. pressure:	957 hPa		
	Ambient temperature:	22 °C		
	Relative humidity:	35 %		
Mode of operation:	n.a.			
Regulation(s):	VW 801 01: 2006 06 section 4.1.4, based on DIN EN 600068-2-64			
Specifications:	<u>Random vibration test sequence:</u> The test has been carried out for 8h long each spatial axis with the following characteristics:			
	Frequency (Hz):	PDS [(m/s ²) ² Hz]:	Frequency (Hz):	PDS [(m/s ²) ² Hz]:
	10	10	300	0,125
	55	3,25	360	0,07
	180	0,125	1000	0,07
Performance criteria:	Criterion A for operating type 3.2 No disturbing noise shall occur			
Test result:	The sample worked properly during and after the test. No disturbing noise occurred			
Classification:	Test passed			
Date of test:	28.03.2006 – 30.03.2006			
Tested by:	N. Scartapacchio			

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Enclosure 4

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Test protocol
Thermal shock

Model:	GT 904
Applicant:	Getronic s.r.l.
Sample no.:	4
Mode of operation:	n.a.
Regulation(s):	VW 801 01: 2006 06 section 5.6.2
Specifications:	
<u>Thermal shock test:</u>	
	The test sample has been heated to +70C° for 1h. Af terwards it has been immersed for 5 min in cold water.
- no. of cycles:	10
- acclimatization duration:	< 20s
- test fluid:	de-ionized water
- water temperature:	(0 to +4) °C
- immersion time:	5 min
- immersion depth:	> 10 mm
Performance criteria:	Criterion A
Test result:	The sample worked properly during and after the test
Classification:	Test passed
Date of test:	06.04.2006
Tested by:	N. Scartapacchio

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Enclosure 5

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Test protocol
Thermal shock test

Model:	GT 904
Applicant:	Getronic s.r.l.
Sample no.:	5
Mode of operation:	n.a.
Regulation(s):	VW 801 01: 2006 06 section 5.2.2
Specifications:	
<u>Thermal shock test:</u>	
	The test sample has been submitted to a thermal shock with the following characteristics:
	<ul style="list-style-type: none">- $T_{oB} = +70^{\circ}\text{C}$- conditioning at T_{oB} for 30 min- $T_{uB} = -40^{\circ}\text{C}$- conditioning at T_{uB} for 45 min- Transfer time = less than 10 s- Number of cycles = 100
Performance criteria:	Criterion C
Test result:	The sample worked properly during and after the test
Classification:	Test passed
Date of test:	06.04.2006 – 12.04.2006
Place of test:	FAKT GmbH - Germany
Tested by:	Dietrich