

Test Report

A-0033-2442-00 AW

Type / Model Name:

SSF883

Product Description:

FLASHER

Applicant:

SANEL SANAYI ELEKTRONIGI IMALAT VE
TICARET LTD STI.



DAT-P-121/02-01
KBA-P 00057-01

EMC -- TEST REPORT

Test Report No. : A-0033-2442-00 AW	2007-07-26 Date of issue
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Type / Model Name : SSF883

Product Description : FLASHER

Applicant : SANEL SANAYI ELEKTRONIGI IMALAT VE TICARET LTD STI.

Address : Gülsuyu, Cicek Sokak No. 5, Maltepe

34848 ISTANBUL

TURKIYE

Manufacturer : SANEL SANAYI ELEKTRONIGI IMALAT VE TICARET LTD STI.

Address : Gülsuyu, Cicek Sokak No. 5, Maltepe

34848 ISTANBUL

TURKIYE

Test Result according to the standards listed in clause 1 test standards:	POSITIVE
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The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test results without the written permission of the test laboratory.

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1 TEST STANDARDS

The tests were performed according to following standards:

Regulation ECE-R10

Concerning the adoption of uniform technical descriptions for wheeled Vehicles, equipment and parts which can be fitted and/or be used on Wheeled vehicles and the conditions for reciprocal recognition of Approvals granted on the basis of these descriptions.

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2 SUMMARY

GENERAL REMARKS:

None

FINAL ASSESSMENT:

The equipment under test **fulfills** the EMC requirements cited in clause 1 test standards.

Date of receipt of test sample : acc. to storage records
Testing commenced on : 2007-07-19
Testing concluded on : 2007-07-19

Checked by:



Grund: Ich bestätige
die Richtigkeit und
Integralität dieses
Dokuments
Datum: 2007.07.26
14:29:08 +02'00'

Martin Stern
Dipl. Ing.(FH)
Manager Automotive Group

Tested by:



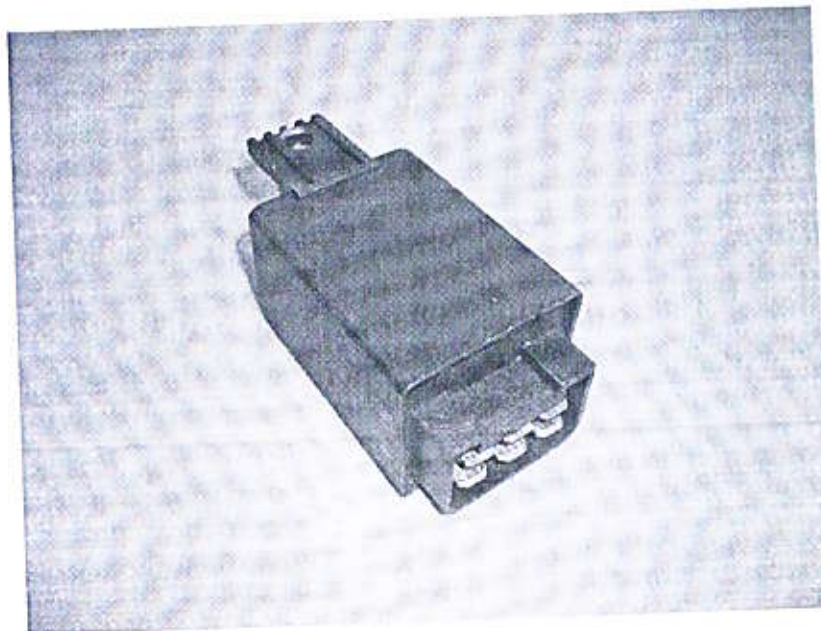
Alexander Weber
Ich bin der Verfasser
dieses Dokuments
2007.07.26 14:22:04
+02'00'

Alexander Weber

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3 EQUIPMENT UNDER TEST

3.1 Photo documentation of the EuT



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3.2 Power supply system utilised

Power supply voltage: 12 V / DC

3.3 Short description of the Equipment under Test (EuT)

The EuT is a flasher relay for use in vehicles.

Number of tested samples: 1
 Serial number: Prototype

Dimensions: L: 8,3 cm W: 3,8 cm H: 3,3 cm

EuT operation mode:

The equipment under test was operated during the measurement under the following conditions:

- Flashing mode

EuT configuration:

The following interface cables and peripheral devices were connected during the measurements:

Interface cables:

Interface cable	Length [m]	Type	Line		Line termination
			shielded	unshielded	
DC power line (Cont. 49;31)	2	2-wires	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Artificial network
Truck pilot lamp (Cont. C)	2	1-wire	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2x4W lamps
L/R (Cont. 49a)	2	1-wire	<input type="checkbox"/>	<input checked="" type="checkbox"/>	4x21W lamps
1 Romork (Cont. C2)	2	1-wire	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2x4W lamps
2 Romork (Cont. C3)	2	1-wire	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2x4W lamps

Peripheral devices:

Kind of equipment	Model and/or Manufacturer
Lamps	OSRAM

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3.4 EuT Monitoring

The EuT was observed visually with a camera and a screen.

3.5 Performance level

The test results shall be classified in terms of the loss of function or degradation of performance of the equipment under test, relative to a performance level defined by its manufacturer or the requestor of the test, or agreed between the manufacturer and the purchaser of the product.

Definition related to the performance level:

- based on the used product standard
- based on the declaration of the manufacturer, requestor or purchaser

Criterion A:

Definition: normal performance within limits specified by the manufacturer, requestor or purchaser

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Criterion B:

Definition: temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the equipment under test recovers its normal performance, without operator intervention.

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Criterion C:

Definition: temporary loss of function or degradation of performance, the correction of which requires operator intervention.

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Criterion D:

Definition: loss of function or degradation of performance, which is not recoverable, owing to damage to hardware or software, or loss of data.

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4 TEST ENVIRONMENT

4.1 Address of the test laboratory

emitel AG
Ohmstrasse 1
94342 Strasskirchen
Deutschland

Laboratory registration numbers:

DAR Registration number:	DAT-P-121/02-01
DAR Registration number:	KBA-P 00057-01
SNCH Registration number:	SNCH 001/2005
FCC Registration number:	765810
IC Registration number:	IC 5066A-1
VCCI Registration number:	R2138

4.2 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature: 15-35 ° C

Humidity: 30-60 %

Atmospheric pressure: 86-106 kPa

All atmospheric pressure values refer to our Laboratory altitude of 324m.

4.3 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16-4-2 /11,2003 „Uncertainties, statistics and limit modelling – Uncertainty in EMC measurements“ and is documented in the quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer does have the sole responsibility for the continued compliance of the device.

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5 TEST CONDITIONS AND RESULTS

5.1 Radiated disturbance

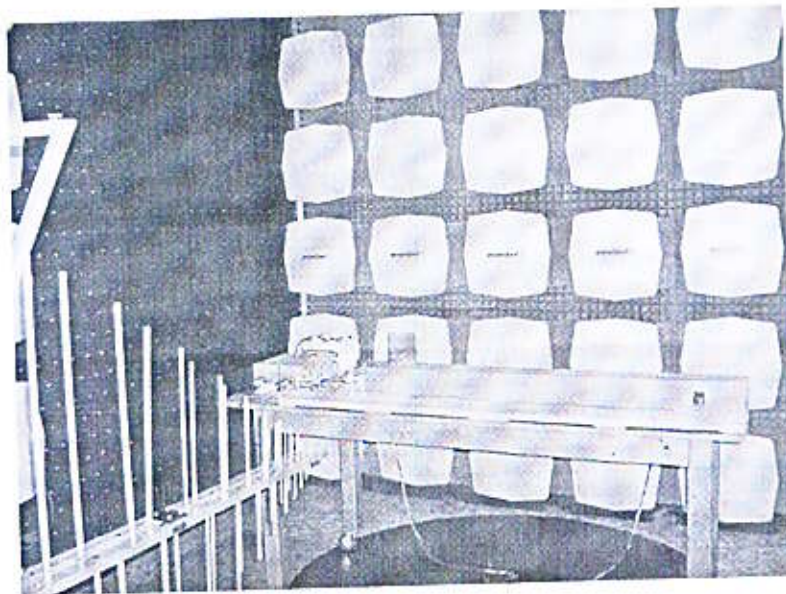
For test instruments and accessories used see section 6 Part ARE.

5.1.1 Description of the test location

Test location: Anechoic Chamber A4

Test distance: 1 metre

5.1.2 Photo documentation of the test set-up



5.1.3 Test specification:

Environmental conditions: Temperature: 29 ° C Humidity: 53 % Atmospheric pressure: 97,6 kPa

Frequency range: 30 MHz - 1000 MHz

The test was carried out in the following operation mode(s):
- Flashing mode

5.1.4 Test result

Min. limit margin broad band 33,0 dB at 106,02 MHz

Min. limit margin narrow band 34,3 dB at 86,88 MHz

The requirements are **FULFILLED**.

Remarks: For detailed results, please see the following page(s).

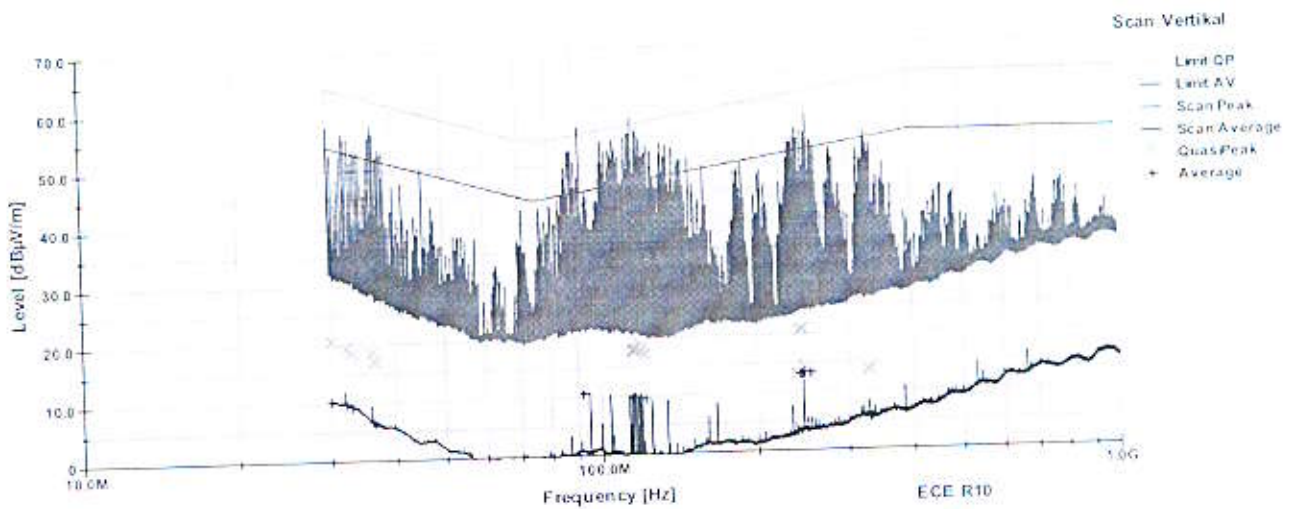
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5.1.5 Test protocol

Result: passed

antenna position: front
 antenna polarisation: vertical
 Operation mode: Flashing mode
 Remarks: none
 Date: 2007-07-19
 Tested by: Alexander Weber

Start frequency [MHZ]	Stop frequency [MHZ]	Resolution bandwidth	step size	Measurement time	Detector
30	1000	120 kHz	60 kHz	100 ms	Peak
30	1000	120 kHz	60 kHz	10 ms	Average



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Final results – vertical:

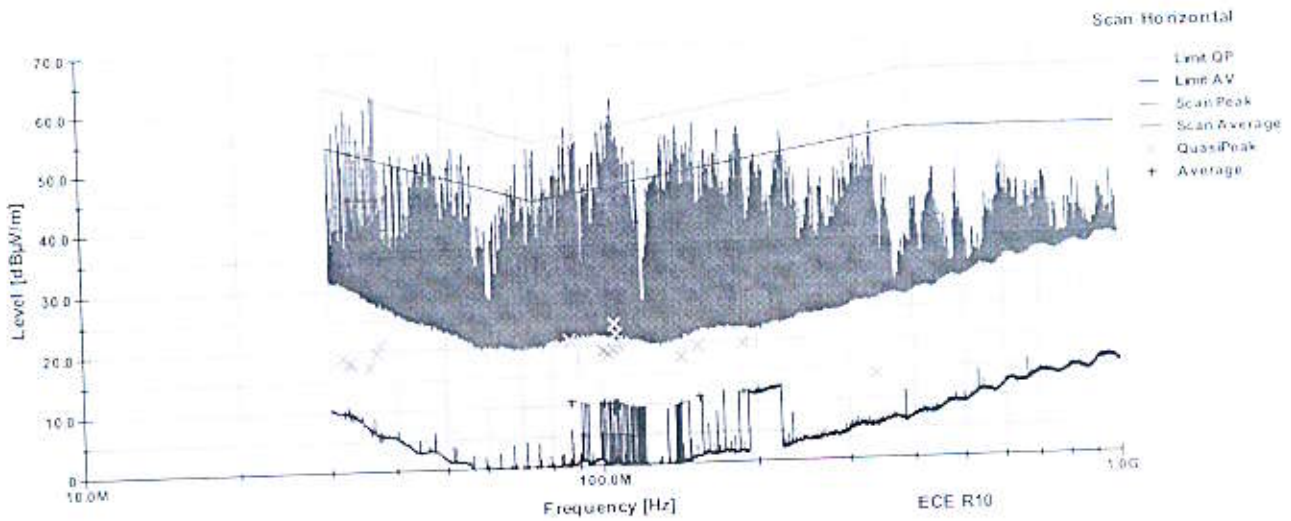
Frequency	Result PK [dB μ V/m]	Result AV [dB μ V/m]	Result QP [dB μ V/m]	Correction [dB]	Limit AV [dB μ V/m]	Limit QP [dB μ V/m]	Margin AV [dB]	Margin QP [dB]
30.06 MHz		10.3	20.6	21.9	54.0	64.0	43.7	43.3
32.1 MHz		9.8	19.2	20.7	53.3	63.3	43.5	44.0
32.88 MHz		9.3	18.5	20.2	53.0	63.0	43.7	44.5
36.06 MHz		6.7	18.6	18.4	52.0	62.0	45.3	43.4
36.48 MHz		6.3	17.0	18.2	51.9	61.9	45.5	44.8
92.16 MHz		10.6	10.6	12.3	45.4	55.4	34.8	44.7
114.48 MHz		9.9	17.8	11.6	46.8	56.8	36.9	39.0
115.68 MHz		9.8	17.8	11.6	46.8	56.8	37.0	39.0
116.68 MHz		9.8	18.0	11.5	46.9	56.9	37.1	38.9
116.46 MHz		9.8	18.0	11.5	46.9	56.9	37.1	38.9
118.44 MHz		9.7	19.0	11.4	47.0	57.0	37.3	38.0
118.86 MHz		9.7	17.9	11.4	47.0	57.0	37.3	39.2
119.28 MHz		9.7	18.3	11.3	47.0	57.0	37.4	38.8
121.26 MHz		9.5	17.2	11.2	47.2	57.2	37.6	40.0
237.96 MHz		3.2	13.0	15.0	51.6	61.6	48.3	48.5
240.72 MHz		13.2	20.5	15.1	51.7	61.7	38.5	41.1
243.9 MHz		13.4	20.8	15.2	51.7	61.7	38.4	41.0
246.72 MHz		13.4	14.3	15.3	51.8	61.8	38.4	47.6
253.08 MHz		13.4	12.7	15.2	52.0	62.0	38.6	49.3
327.96 MHz		5.6	13.8	17.1	53.7	63.7	48.1	49.9
328.74 MHz		5.5	13.5	17.1	53.7	63.7	48.2	50.2

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Result: passed

antenna position: front
 antenna polarisation: horizontal
 Operation mode: Flashing mode
 Remarks: none
 Date: 2007-07-19
 Tested by: Alexander Weber

Start frequency [MHz]	Stop frequency [MHz]	Resolution bandwidth	step size	Measurement time	Detector
30	1000	120 kHz	60 kHz	100 ms	Peak
30	1000	120 kHz	60 kHz	10 ms	Average



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Final results – horizontal:

Frequency	Result PK [dB μ V/m]	Result AV [dB μ V/m]	Result QP [dB μ V/m]	Correction [dB]	Limit AV [dB μ V/m]	Limit QP [dB μ V/m]	Margin AV [dB]	Margin QP [dB]
31.86 MHz		9.8	18.9	20.9	53.3	63.3	43.5	44.4
32.64 MHz		9.5	18.0	20.4	53.1	63.1	43.6	45.1
33.06 MHz		9.2	17.8	20.1	52.9	62.9	43.7	45.1
35.82 MHz		6.8	17.3	18.5	52.1	62.1	45.2	44.8
37.02 MHz		6.0	19.7	17.9	51.7	61.7	45.7	42.0
37.44 MHz		5.9	21.0	17.7	51.6	61.6	45.7	40.6
86.88 MHz		10.7	20.7	12.0	45.0	55.0	34.3	34.2
100.8 MHz		10.5	18.9	12.3	45.9	55.9	35.4	37.1
103.2 MHz		10.4	18.5	12.2	46.1	56.1	35.7	37.6
105.0 MHz		10.4	19.3	12.1	46.2	56.2	35.9	37.0
105.18 MHz		10.3	19.1	12.1	46.2	56.2	35.9	37.1
105.6 MHz		9.2	19.4	12.1	46.2	56.2	37.0	36.8
106.02 MHz		10.3	23.3	12.0	46.3	56.3	35.9	33.0
106.8 MHz		10.2	21.6	12.0	46.3	56.3	36.1	34.7
107.16 MHz		10.2	20.3	12.0	46.3	56.3	36.1	36.1
107.58 MHz		10.2	19.7	11.9	46.4	56.4	36.1	36.6
142.62 MHz		10.2	19.7	11.5	48.2	58.2	38.2	40.6
154.14 MHz		10.0	17.7	12.6	48.7	58.7	37.6	39.4
187.62 MHz		11.1	19.4	12.6	48.7	58.7	37.6	39.4
338.16 MHz		11.6	19.6	13.5	50.0	60.0	38.4	40.4
		5.7	14.0	17.1	53.9	63.9	48.2	49.9

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6 USED TEST EQUIPMENT AND ACCESSORIES

All test instruments used, in addition to the test accessories, are calibrated and verified regularly.

Test ID	Model / Type	Kind of Equipment	Manufacturer	Equipment No.
ARE	ESPI 3	EMI Test Receiver	Rohde & Schwarz München	01-02/03-03-004
	ESH 3 - Z 6	Artificial Network	Rohde & Schwarz München	01-02/20-01-002
	ESH 3 - Z 6	Artificial Network	Rohde & Schwarz München	01-02/20-05-007
	3142B	Antenna	ETS EMC Systems LP	01-02/24-01-010
	N-3000-N	RF Cable	emitel AG	01-02/50-05-122
	N-6000-N	RF Cable	emitel AG	01-02/50-05-125

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