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# EMC EMISSION -- TEST REPORT

Test report file no. : T13826-1-10KG Date : May 03, 1999

of issue

Model / Type No. : VENUS

Kind of product : Immobilizer system

Applicant : Siemens AG

Manufacturer : Siemens AG

Licence holder : Siemens AG

Address : Wernerwerkstraße 2

D-93049 Regensburg

Test result accrdg.

to the regulation(s) at page 3

Positive

 $oldsymbol{0}$  Negative

Mikes Product Service is a subcontractor to TÜV Product Service, GmbH according to the principles outlined in ISO/IEC Guide 25 and EN 45001.

Mikes Product Service reports apply only to the specific samples tested under stated test conditions. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. Mikes Product Service shall have no liability for any deductions, inferences or generalizations drawn by the client or others from Mikes Product Service issued reports.

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This testreport with appendix consists of 62 pages. The testresult only responds to the tested sample. It is not allowed to copy this report even partly without the allowance of the test laboratory.

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<b>B</b> )	Test data		
	Conducted emissions	10/150 kHz - 30 MHz	5; 9
	Radiated emissions	10 kHz - 30 MHz	5; 9
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# **TESTREGULATIONS**

The tests were performed according to following regulations :

/ 2.1991 o - EN 50081-1 o - EN 50081-2 / 7.1993

/ 3.1991 o - EN 55011

o - Group 1

o - Group 2

o - class A

o - class B

o - EN 55014 / 4.1993

- Household appliances and similar

o - tools

o - Semiconductor devices

/ A2:1990 - EN 55014

- EN 55104 / 5.1995 Category:

- EN 55015 / A1:1990

- EN 55015 / 12.1993

/ 5.1995 - EN 55022

o - class A

o - class B

o - prEN 55103-1/ 3.1995

o - prEN 50121-3-2 / 3.1995

o - EN 60601-1-2 / 4.1994

o - VCCI

o - class A

o - class B

● - FCC Part 15 Subpart C Section 15.209

o - CISPR



# ENVIRONMENTAL CONDITIONS

Temperature: 20 ° C

Humidity 58 %

Atmospheric pressure 1010 mbar

# POWER SUPPLY SYSTEM UTILIZED

Power supply system

: 12.0 Volt DC (car battery)

# SHORT DESCRIPTION OF THE EQUIPMENT UNDER TEST (EUT)

The system is a vehicle immobilization system. This system type VENUS consists of a control unit, the individual aerials (Doors and bumper of an automotive).

# **DEFINITIONS FOR SYMBOLS USED IN THIS TEST REPORT**

- Black box indicates that the listed condition, standard or equipment is applicable for this Report.
- o Blank box indicates that the listed condition, standard or equipment was not applicable for this Report.



## **TESTCONDITIONS**

The measurement of the conducte performed in a shielded room.

• - Test not applicable

Testlocation:
o - Shielded room no. 1 The measurement of the conducted emissions (interference voltage) were

- o Shielded room no. 1
- o Shielded room no. 2
- o Shielded room no. 3
- o Shielded room no. 4
- o Shielded room no. 5
- o Shielded room no. 6
- o Shielded room no. 7
- o Anechoic chamber
- o Full compact chamber

#### Test equipment used:

Model Number	Manufacturer	Description	Serial Number	Cal Date

All used test-instruments as well as the Test-accessories are calibrated regularly.

The measurement of the radiated emissions (magnetic field) in the frequency range from 9 kHz to 30 MHz were performed

#### o - Test not applicable

- o in a shielded room
- - at a non reflecting open-site
- - in a testdistance of 3 meters.
- o in a testdistance of 10 meters.
- - in a testdistance of 30 meters.

#### Test equipment used:

Model Number	Manufacturer	<b>Description</b>	Serial Number	Cal Date
ESHS 30	Rohde & Schwarz	Test Receiver	828.765/003	17.3.1999
FMZB 1516	Rohde & Schwarz	Magnetic field antenna	335.4711.52	17.11.1998



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The measurement of the radiated emissions (electric field) in the frequency range of 30 MHz-1000 MHz were performed in horizontal and vertical antenna polarization at a non-reflecting open-site and a test distance of:

#### o - Test not applicable

- - Open-site 1
- o Open-site 2
- - 3 meters
- o 10 meters
- o 30 meters

Test equipment used:

Model Number	Manufacturer	Description	Serial Number Cal Date	
ESVP	Rohde & Schwarz	Test Receiver	880.726/005 5.12.1998	
BBA 9106	Schwarzbeck	Antenna	no Number 6.08.1998	
UHALP 9107	Schwarzbeck	Antenna	no Number 7.12.1998	

All used test-instruments as well as the Test-accessories are calibrated regularly.

The measurement of the interference power were performed in a shielded room by using the absorbing clamp on the mains and interface cables in the frequency range  $30~\mathrm{MHz}$  -  $300~\mathrm{MHz}$ .

#### • - Test not applicable

#### Testlocation:

- o Anechoic chamber
- o Full compact chamber

## Test equipment used:

Model Number	Manufacturer	Description	Serial Number	Cal Date

All used test-instruments as well as the Test-accessories are calibrated regularly.



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一名 これのはなる 動物の名を変える でいかんしょう しょうこうかい 医性性神経 はいじ

The measurement of the equivalent radiated emissions in the frequency range 1 GHz - 18 GHz were performed in horizontal and vertical antenna polarization at a non-reflecting test-site and a test distance of:

#### Test not applicable

#### Testlocation:

次的方法是一个本人的对对对对对对

- o Open-site 1
- o Open-site 2
- o Anechoic chamber
- o Full compact chamber
- o 1 meters
- o 3 meters
- o 10 meters

#### Test equipment used:

Model Number Manufacturer Description Serial Number Cal Date

All used test-instruments as well as the Test-accessories are calibrated regularly.



19.00 19.00

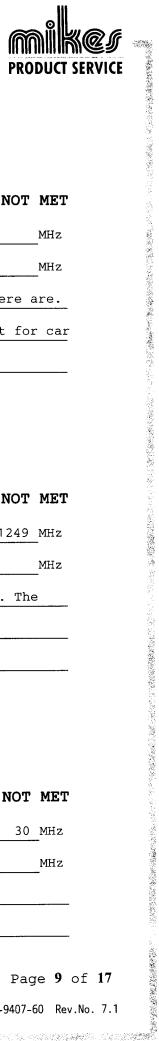
# EQUIPMENT UNDER TEST

Operation -	mode of	the	EUT.:
-------------	---------	-----	-------

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

•	-	Standby
0	-	Testprogram (H - Pattern)
0	-	Testprogram (color bar)
0	-	Testprogram (customer specific)
•	_	Permanent Transmit
0	_	\ 
Fc th	) 11	figuration of the equipment under test: owing peripherial devices and interface cables were connected duri measurement:
•	-	Vehicle Type :Mercedes
0	_	Type :
0	-	Type :
0	_	Type :
0		Type :
0	-	unshielded power cable
0	-	unshielded cables
0	-	shielded cables for connection to the notebook
•	-	customer specific cables

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# FCC ID: KR5VENUS TESTRESULT Conducted emissions 10/150 kHz - 30 MHz

Test not applicable

The requir	ements are	0	-	MET	•	0	-	NOT	MET
Min. limit	margin	_			dB	at			MHz
Max. limit	exceeding	_			dВ	at	_		MHz
Remarks:	EUT is connected to the DC pow	er	su	pply	in th	ne car.	Th	ere	are.
_	no requirements for coducted e	mis	si	ons	on DC	input	por	t fo	r car
_	use.			- 10		<del>\</del>			
						J			
Radiated e	missions (magnetic field) 10 kH	Iz -	3	O MH	<u>Iz</u>				
o - Test n	ot applicable								
The requir	ements are	•	-	MEI	ŗ	0		NOT	MET
Min. limit	margin	.>	10		dB	at	0.	1249	MHz
Max. limit	exceeding	_			dB	at			MHz
Remarks:	The limits are met. This was a	pe	ak	and	QP me	easurem	ent	. The	e
_	reading in average was 5 dB le	ss	th	an p	eak.				
_					_				
Radiated e	missions (electric field) 30 MF	Iz -	· 1	000	MHz				
o - Test r	not applicable								
The requir	ements are	•	-	MET	r	0	-	NOT	MET
Min. limit	margin		5.8	3	dВ	at		30	MHz 
Max. limit	exceeding	_			dВ	at			MHz
Remarks:	The limits are met.					11/7/42			
-			·						

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# **TESTRESULT**

Interference power at the mains and interface cables 30 MHz - 300 MHz

• - Test	not applicable	]																	
The requir	rements are						0	_	M	ET				(	0	-	NO	Т	MET
Min. limit	t margin						-				d	В		at	-				MHz
Max. limit	t exceeding										d	В		at	=				MHz
Remarks:																			
														N i		<del></del>			
		••																	
Equivalent	t radiated emissi	ons 1	_0	GHz		18 (	Hz	i											
• - Test	not applicable																		
The requir	rements are						0	_	M	EΤ				(	0	-	NO	Т	MET
Min. limit	t margin						-			<del></del> -	d	В		at	:				GHz
Max. limit	t exceeding										d	В		at	-				GHz
Remarks:	Because of the	used	f	req	uer	ncie	s	the	ere	e a:	re 1	no	re	qui	re	em∈	ents	s f	or
	radiated emiss	ions.																	



## SUMMARY

#### **GENERAL REMARKS:**

The measurement was performed with fixed installed antennas in an automotive. Each test was performed with the transmitter antenna in direction to the test receiver antenna. The following antennas was tested:

Door Antennas in the left side of the car:

5WK4 832 (front door)

5WK4 834 (back door)

Bumper antenna in the back of the car:

5WK4 836

The tests were only performed with the antennas in the left side of the automotive, because the antennas on the right side are 100% identical.

#### FINAL JUDGEMENT:

The requirements according to the technical regulations and yested operation modes are

- - met.
- o not met.

The equipment under test

- - Fulfills the general approval requirements cited on page 3.
- o Does not fulfill the general approval requirements cited on page 3.

Testing Start Date

April 06, 1999

Testing End Date

となるとのはないのでは、一般を表現のないとなっては、ないのでは、これでは、これでは、

April 08, 1999

- MIKES PRODUCT SERVICE GmbH -

Test-engineer

Günter Mikes

Dipl.-Ing.(FH)

Klaus Gegenfurtner Dipl.-Ing. (FH)



Test-Setup: Magnetic Field 9 kHz - 30 MHz

Door Antennas:





Test-Setup: Magnetic Field 9 kHz - 30 MHz

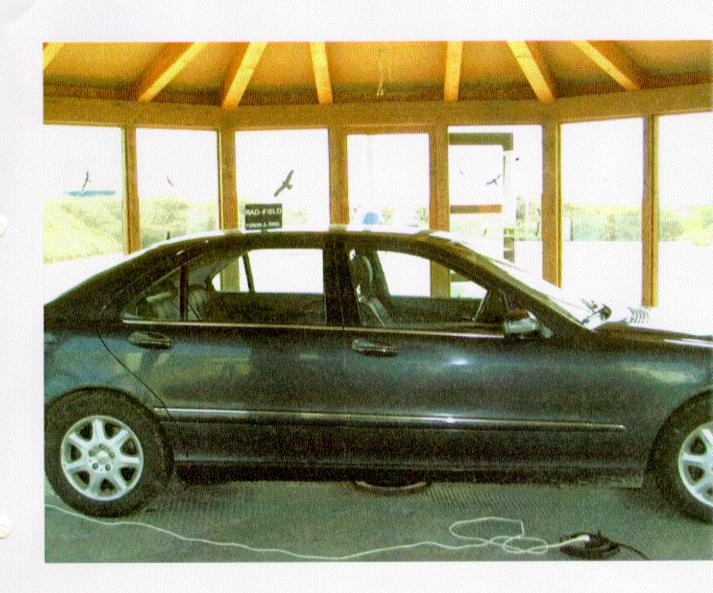
Bumper Antenna:





Test-Setup: Radiated emission 30 MHz - 1000 MHz

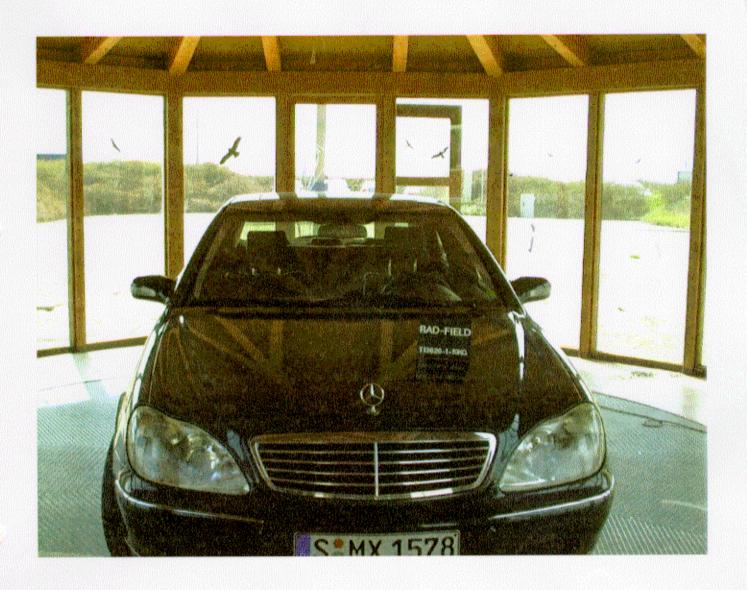
Front View:





Test-Setup: Radiated emission 30 MHz - 1000 MHz

Front View:





Test-Setup: Radiated emission 30 MHz - 1000 MHz

Rear View:





Test-Setup: Radiated emission 30 MHz - 1000 MHz

Rear View:

