



EMISSION -- TEST REPORT

Test Report File No. : **T 21502-1-01 NF** Date of issue : December 08, 2001

Type Designation : 5WY8301

Kind of Product : Immobilizer

Applicant : Siemens VDO Automotive AG

Manufacturer : Siemens VDO Automotive AG

Licence holder : Siemens VDO Automotive AG

Address : Wernerwerkstraße 2

93049 Regensburg, Deutschland

Test result accdg. to the regulation(s) at page 3 :

Positive

This test report with attachment consists of **15** pages.

The test result only corresponds to the tested sample. It is not permitted to copy this report, in part or in full, without the permission of the test laboratory.

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TEST REGULATIONS

The tests were performed according to following regulations :

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

-
- o - EN 55011 / 3.1991

- o - Group 1
- o - class A
- o - Group 2
- o - class B

- o - EN 55014 / 4.1993

- o - Household appliances and similar
- o - tools
- o - Semiconductor devices

- o - EN 55014 / A2:1990
- o - EN 55104 / 5.1995

Category:

- o - EN 55015 / A1:1990
- o - EN 55015 / 12.1993

- o - EN 55022 / 5.1995

- 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 1
- o - class 2

- - Part 15 Subpart C (15.209)
- o - Part 15 Subpart C (15.231)

ADDRESS OF THE TEST LABORATORY

■ - MIKES BABT PRODUCT SERVICE GmbH
Ohmstrasse 2-4
D - 94342 Strasskirchen

o - _____

ENVIRONMENTAL CONDITIONS

Temperature: 15-35 ° C

Humidity 45-60 %

Atmospheric pressure 860-1060 mbar

POWER SUPPLY SYSTEM UTILIZED

| | | |
|---------------------|---|---|
| Power supply system | <input type="radio"/> 230V/50 Hz / 1 ϕ | <input checked="" type="checkbox"/> 12 V DC |
| | <input type="radio"/> 400V/50 Hz 3PE | <input type="radio"/> 400V/50 Hz 3NPE |

STATEMENT OF MEASUREMENT UNCERTAINTY

SHORT DESCRIPTION OF THE EQUIPMENT UNDER TEST (EuT)

Number of received/tested samples: 2 / 1

Serial Number: Pre-Production sample

DEFINITIONS FOR SYMBOLS USED IN THIS TEST REPORT

■ The black square 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.

MEASUREMENT PROTOCOL FOR FCC, VCCI AND AUSTEL

Test Methodology

Conducted and radiated emission testing is performed according to the procedures in International Special Committee on Radio Interference (CISPR) Publication 22 (1993), European Standard EN 55022 and Australian Standard AS 3548 (which are based on CISPR 22).

The Japanese standard, "Voluntary Control Council for Interference (VCCI) by Data Processing Equipment and Electronic Office Machines, Technical Requirements" is technically equivalent to CISPR 22 (1993). For official compliance, a conformance report must be sent to and accepted by the VCCI.

In compliance with FCC Docket 92-152, "Harmonization of Rules for Digital Devices Incorporate International Standards", testing for FCC compliance may be done following the ANSI C63.4-1992 procedures and using the FCC limits or the CISPR 22 Limits.

Measurement Uncertainty

The test system for conducted emissions is defined as the LISN, tuned receiver or spectrum analyzer, and coaxial cable. The test system for radiated emissions is defined as the antenna, the pre-amplifier, the spectrum analyzer and the coaxial cable. These test systems have a measurement uncertainty of ± 4.5 dB. The equipment comprising the test systems are calibrated on an annual basis.

Justification

The Equipment Under Test (EuT) is configured in a typical user arrangement in accordance with the manufacturer's instructions. A cable is connected to each available port and either terminated with a peripheral into its characteristic impedance or left unterminated. When appropriate, the cables are manually manipulated with respect to each other to obtain maximum emissions from the unit.

General Standard Information

The test methods used comply with CISPR Publication 22 (1993), EN 55022 (1987) and AS 3548 (1992) - "Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment" and with ANSI C63.4-1992 - "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz."

For detailed description of each measurement please refer to section test results.

DISCOVERY OF WORST CASE MEASUREMENT CONDITION:

The Immobilizer is a part of an anti theft system. The immobilizer is designed for the operation at a fixed transmitter frequency of 135 kHz.

To find out the worst case conditions for the complete measurement the following tests have been performed:

- Measurement of the radiated fieldstrength of the operating frequency measured in permanent operation mode in the specified channel. This measurement have been performed in order to find out the maximum transmitted fieldstrength of the immobilizer.
- Measurement of the radiated spurious emissions measured in permanent operation mode in the specified channel. This measurement have been performed in order to find out the maximum spurious emissions of the immobilizer.

Based on this test results, the measurements have been performed completely on the specified channel. This test results are documented in the following sections of the testreport.

TEST RESULT**CONDUCTED EMISSIONS - 10/150 kHz - 30 MHz****■ - Test not applicable****Test location :**

- 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

For test instruments and test accessories used please see attachment B A4

Description of Measurement

The final level, expressed in dB μ V, is arrived at by taking the reading directly from the EMI receiver. This level is compared directly to the FCC Limit or to the CISPR limit, which is equivalent to the Australian AS 3548 limit.

To convert between dB μ V and μ V, the following conversions apply:

$$\text{dB}\mu\text{V} = 20(\log \mu\text{V})$$

$$\mu\text{V} = \text{Inverse log}(\text{dB}\mu\text{V}/20)$$

Conducted emissions on the 50 Hz and/or 60 Hz power interface of the EuT are measured in the frequency range of 150 kHz to 30 MHz. The measurements are performed using a receiver, which has CISPR characteristic bandwidth and quasi-peak detection, and a Line Impedance Stabilization Network (LISN), with 50 Ω /50 μ H (CISPR 16) characteristics. Table top equipment is placed on a non-conducting table 80 centimeter's above the floor and is positioned 40 centimeter's from the vertical ground plane (wall) of the screen room. If the minimum passing margin appears to be less than 20 dB with a peak mode measurement, the emissions are remeasured using a tuned receiver with quasi-peak and average detection and recorded on the data sheets.

Test result:

The requirements are

o - MET

o - NOT MET

Min. limit margin

_____ dB at _____ MHz

Max. limit exceeding

_____ dB at _____ MHz

Remarks: NOT APPLICABLE

SPURIOUS EMISSION

Spurious emissions from the EuT are measured in the frequency range of 9 kHz to 30 MHz using a tuned receiver and a shielded loop antenna. The antenna was positioned 3, 10 or 30 meters horizontally from the EuT. Measurements have been made in all three orthogonal axes and the shielded loop antenna was rotated to locate the maximum of the emissions.

Spurious emissions from the EuT are measured in the frequency range of 30 MHz to 10 times the highest used frequency using a tuned receiver and appropriate broadband linearly polarized antennas. Measurements between 30 MHz and 1000 MHz are made with 120 kHz/6 dB bandwidth and quasi-peak detection and measurements above 1000 MHz are made with a 1 MHz/6 dB bandwidth and peak detection, remeasurement of results which may be critical will be repeated in average mode. Table top equipment is placed on a 1.0 X 1.5 meter non-conducting table 80 centimetres above the ground plane. Floor standing equipment is placed directly on the turntable/ground plane. Interface cables that are closer than 40 centimetres to the ground plane are bundled in the center in a serpentine fashion so they are at least 40 centimetres from the ground plane. Cables to simulators/testers (if used in this test) are routed through the center of the table and to a screen room located outside the test area. The antenna was positioned 3, 10 or 30 meters horizontally from the EuT. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 meters, measurement scans are made with both horizontal and vertical antenna polarization`s and the EuT are rotated 360 degrees.

SPURIOUS EMISSION (MAGNETIC FIELD) 9 kHz - 30 MHz

| |
|-------------------------|
| o - Test not applicable |
|-------------------------|

- o - in a shielded room
- - Open-site 1
- and
- - in a test distance of 3 meters.
- o - in a test distance of 30 meters.

For test instruments and test accessories used please see attachment B SER1

Description of Measurement

The final level, expressed in dB μ V/m, is arrived at by taking the reading from the EMI receiver (Level dB μ V) and adding the antenna correction factor and cable loss factor (Factor dB) to it. This result then has to be compared with the relevant FCC limit.

The resolution bandwidth during the measurement is as follows:

9 kHz – 150 kHz: ResBW: 200 Hz

150 kHz – 30 MHz: ResBW: 10 kHz

Example:

| Frequency (MHz) | Level (dB μ V) | + | Factor (dB) | = | Level (dB μ V/m) | Limit (dB μ V/m) | = | Delta (dB) |
|--------------------|-----------------------|---|----------------|---|-------------------------|-------------------------|---|---------------|
| 1.705 | 5 | + | 20 | = | 25 | 30 | = | 5 |

Testresult in detail:

| Frequency [MHz] | L: PK [dBµV] | L: AV [dBµV] | L: QP [dBµV] | Correct. [dB] | L: PK [dBµV/m] | L: AV [dBµV/m] | L: QP [dBµV/m] | Limit [dBµV/m] |
|--------------------|-----------------|-----------------|-----------------|------------------|-------------------|-------------------|-------------------|-------------------|
| 0.405 | | 28.3 | | 20.0 | | 48.3 | | 94 |
| | | | | | | | | |
| | | | | | | | | |

The requirements are

■ - MET

○ - NOT MET

Min. limit margin

45.7 dB0.405 MHz

Min. limit margin

 dB MHzRemarks: The limits are kept.

SPURIOUS EMISSIONS (electric field) 30 MHz - 1000 MHz

| |
|-------------------------|
| o - Test not applicable |
|-------------------------|

Test location :

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

For test instruments and test accessories used please see attachment B SER2

Description of Measurement

The final level, expressed in dB μ V/m, is arrived by taking the reading from the EMI receiver (Level dB μ V) and adding the correction factors and cable loss factor (Factor dB) to it. This is done automatically in the EMI receiver, where the correction factors are stored. This result then has the FCC or CISPR limit subtracted from it to provide the Delta which gives the tabular data as shown in the data sheets at page 24 - 25. The CISPR 22 limit is equivalent to the Australian AS 3548 limit.

Example:

| | | | | | | | | |
|--------------------|-----------------------|---|----------------|---|-------------------------|-------------------------|---|---------------|
| Frequency (MHz) | Level (dB μ V) | + | Factor (dB) | = | Level (dB μ V/m) | Limit (dB μ V/m) | = | Delta (dB) |
| 719 | 75 | + | 32.6 | = | 107.6 | 110 | = | -2.4 |

Testresult in detail:

| Frequency [MHz] | L: PK [dB μ V] | L: AV [dB μ V] | L: QP [dB μ V] | Correct. [dB] | L: PK [dB μ V/m] | L: AV [dB μ V/m] | L: QP [dB μ V/m] | Limit [dB μ V/m] |
|--------------------|-----------------------|-----------------------|-----------------------|------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Test result:

The requirements are

■ - MET

o - NOT MET

Min. limit margin

> 5.0 dB

30-1000 MHz

Min. limit margin

_____ dB

_____ MHz

Remarks: The limits are met.

SPURIOUS EMISSION 1 GHz - 18 GHz

| |
|--------------------------------|
| <p>■ - Test not applicable</p> |
|--------------------------------|

Testlocation :

- o - Open-site 1
- o - Open-site 2
- o - Anechoic chamber
- o - Full compact chamber

- o - 1 meters
- o - 3 meters
- o - 10 meters

For test instruments and test accessories used please see attachment B SER3

Description of Measurement

The final level, expressed in dB μ V/m, is arrived by taking the reading from the Spectrumalyzer in dB μ V and adding the correction factors of the test setup incl. cables.

Example of the correction value at 1.8 GHz

| Level reading at 1.8 GHz | Correction EMCO 3115 | correction Amplifier AWT 4534 + cable | Correction factor (summarized) | corrected level |
|--------------------------|----------------------|---------------------------------------|--------------------------------|-------------------|
| 56 dB μ V | +27.3 dB | -41.2 dB | -15.8 dB | 42.1 dB μ V/m |

Testresult in detail:

| Frequency [MHz] | L: PK [dB μ V] | L: AV [dB μ V] | L: QP [dB μ V] | Correct. [dB] | L: PK [dB μ V/m] | L: AV [dB μ V/m] | L: QP [dB μ V/m] | Limit [dB μ V/m] |
|-----------------|--------------------|--------------------|--------------------|---------------|----------------------|----------------------|----------------------|----------------------|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Testresult

The requirements are

o - MET

o - NOT MET

Min. limit margin

_____ dB

_____ MHz

Min. limit margin

_____ dB

_____ MHz

Remarks: NOT APPLICABLE

FIELD STRENGTH OF THE FUNDAMENTAL WAVE

| |
|-------------------------|
| o - Test not applicable |
|-------------------------|

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

For test instruments and test accessories used please see attachment B CPR1

Description of Measurement

The final level, expressed in dB μ V/m, is arrived by taking the reading from the EMI receiver (Level dB μ V) and adding the correction factors and cable loss factor (Factor dB) to it. This is done automatically in the EMI receiver, where the correction factors are stored. This result then has the FCC or CISPR limit subtracted from it to provide the Delta which gives the tabular data as shown in the data sheets at page 24 - 25. The CISPR 22 limit is equivalent to the Australian AS 3548 limit.

Example:

| | | | | | | | | | |
|--------------------|-----------------------|---|----------------|---|-------------------------|---|-------------------------|---|---------------|
| Frequency (MHz) | Level (dB μ V) | + | Factor (dB) | = | Level (dB μ V/m) | - | Limit (dB μ V/m) | = | Delta (dB) |
| 315 | 45 | + | 22.5 | = | 67.5 | - | 74.3 | = | -6.8 |

Testresult in detail:

| Frequency [MHz] | L: PK [dB μ V] | L: AV [dB μ V] | L: QP [dB μ V] | Correct. [dB] | L: PK [dB μ V/m] | L: AV [dB μ V/m] | L: QP [dB μ V/m] | Limit [dB μ V/m] |
|--------------------|-----------------------|-----------------------|-----------------------|------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| 135.1 | | 68.3 | | 20.0 | | 88.3 | | 105.0 |
| | | | | | | | | |
| | | | | | | | | |

Testresult

The requirements are

■ - MET

o - NOT MET

Min. limit margin 16.7 dB 0.135 MHz

Min. limit margin _____ dB _____ MHz

Remarks: The limits are kept.

CONDUCTED POWER OF THE FUNDAMENTAL WAVE MEASURED ON THE ANTENNA TERMINALS

■ - Test not applicable

Testlocation :

- 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
- o - Climatic test chamber VLK

For test instruments and test accessories used please see attachment B CPC2

Description of Measurement

The conducted power of the fundamental wave measured on the antenna terminals in a climatic test chamber. The antenna jack was connected to the input of a communication test receiver. The internal batteries have been removed also and a variable DC power supply was used instead. The measurements have been made with the EuT unmodulated. During the test the supply voltage and the temperature were varied and applied simultaneously. The lower supply voltage was given by the manufacturer. In case the equipment was switching off before, the switch off voltage was used instead.

Testresult

The requirements are

o - MET

o - NOT MET

| Frequency range of equipment | | | | | | | | |
|------------------------------|------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Temperature °C | DC supply voltage V | Power dBm | Power dBm | Power dBm | Power dBm | Power dBm | Power dBm | Power dBm |
| -30 | | | | | | | | |
| -20 | | | | | | | | |
| -10 | | | | | | | | |
| 0 | | | | | | | | |
| +10 | | | | | | | | |
| +20 | | | | | | | | |
| +30 | | | | | | | | |
| +40 | | | | | | | | |
| +50 | | | | | | | | |

Remarks: NOT APPLICABLE

EQUIPMENT UNDER TEST

Operation - mode of the EuT.:

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

- ☐ - Standby
- ☐ - Test program (H - Pattern)
- ☐ - Test program (colour bar)
- ☐ - Test program (customer specific)
- ☒ - Transmit at frequency 135.0 kHz.

Configuration of the equipment under test: see attachment D

Following periphery devices and interface cables were connected during the measurement:

- | | |
|-------------------------------|--------------|
| <input type="radio"/> - _____ | Type : _____ |
| <input type="radio"/> - _____ | Type : _____ |
| <input type="radio"/> - _____ | Type : _____ |
| <input type="radio"/> - _____ | Type : _____ |
| <input type="radio"/> - _____ | Type : _____ |
| <input type="radio"/> - _____ | Type : _____ |

☒ - unshielded power cable

☐ - unshielded cables

☐ - shielded cables MBPS.No.:

☐ - customer specific cables

- ☐ - _____
- ☐ - _____

S U M M A R Y

GENERAL REMARKS:

The product 5WY8301 has been tested on the following frequency:
TX-Mode: 135 kHz

The unit measurements met also the bandwidth requirements.

FINAL JUDGEMENT:

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

■ - met.

o - **not** met.

The Equipment Under Test

■ - **Fulfils** the general approval requirements according to page 3.

o - **Does not** fulfil the general approval requirements according to page 3.

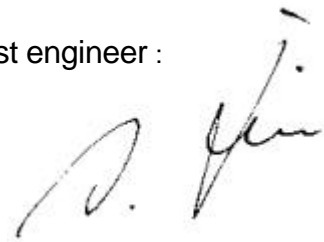
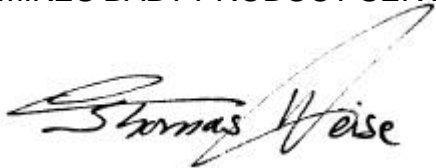
Date of receipt of test sample : accdg. to storage record of MBPS

Testing Start Date : November 25, 2001

Testing End Date : December 5, 2001

- MIKES BABT PRODUCT SERVICE GmbH -

Test engineer :



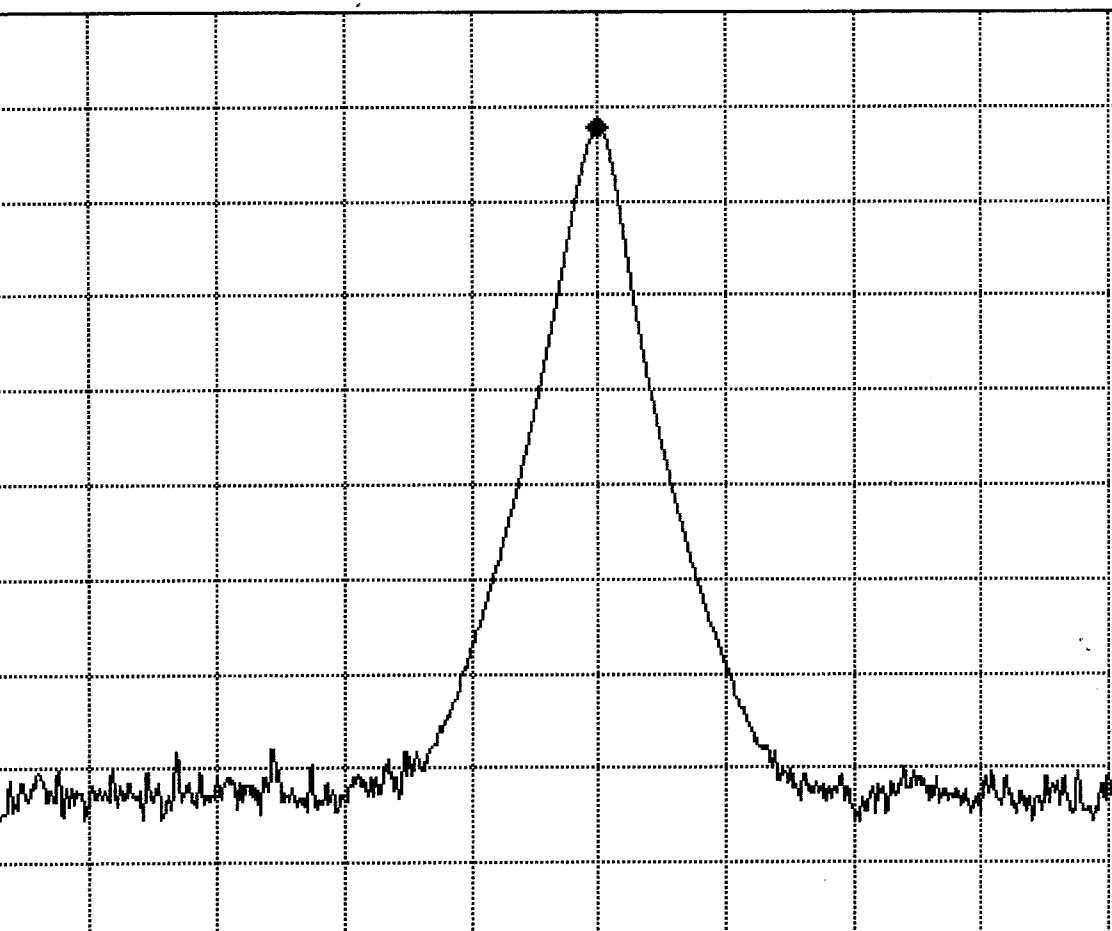
i. V.

Günter Mikes
Dipl.Ing.(FH)

Nikolaus Fischer

REF 100.0 dB μ V
10dB/

A_View Posi B_Blank Norm MKR 134.950 kHz
87.68 dB μ V



CENTER 134.950 kHz SPAN 5.000 kHz
*RBW 100 Hz VBW 100 Hz SWP 1.5 s *ATT 10dB

| | |
|--------------|--------------------|
| Auftragsnr.: | 21502 |
| Kunde: | SIEMENS VDO |
| Gerät: | 114 MOBILIZER |
| Modell: | SWY 8301 |
| Ser.Nr.: | 1 (01) |
| Norm: | FCC PART 15 |
| Unterpunkt: | SUBPART C (15.209) |
| Messung: | MOD. BANDW. |
| Bemerkung: | TX-MODIE, 12 VDC |

[illegible]

FCC ID:KR55WY8301

A20F A4

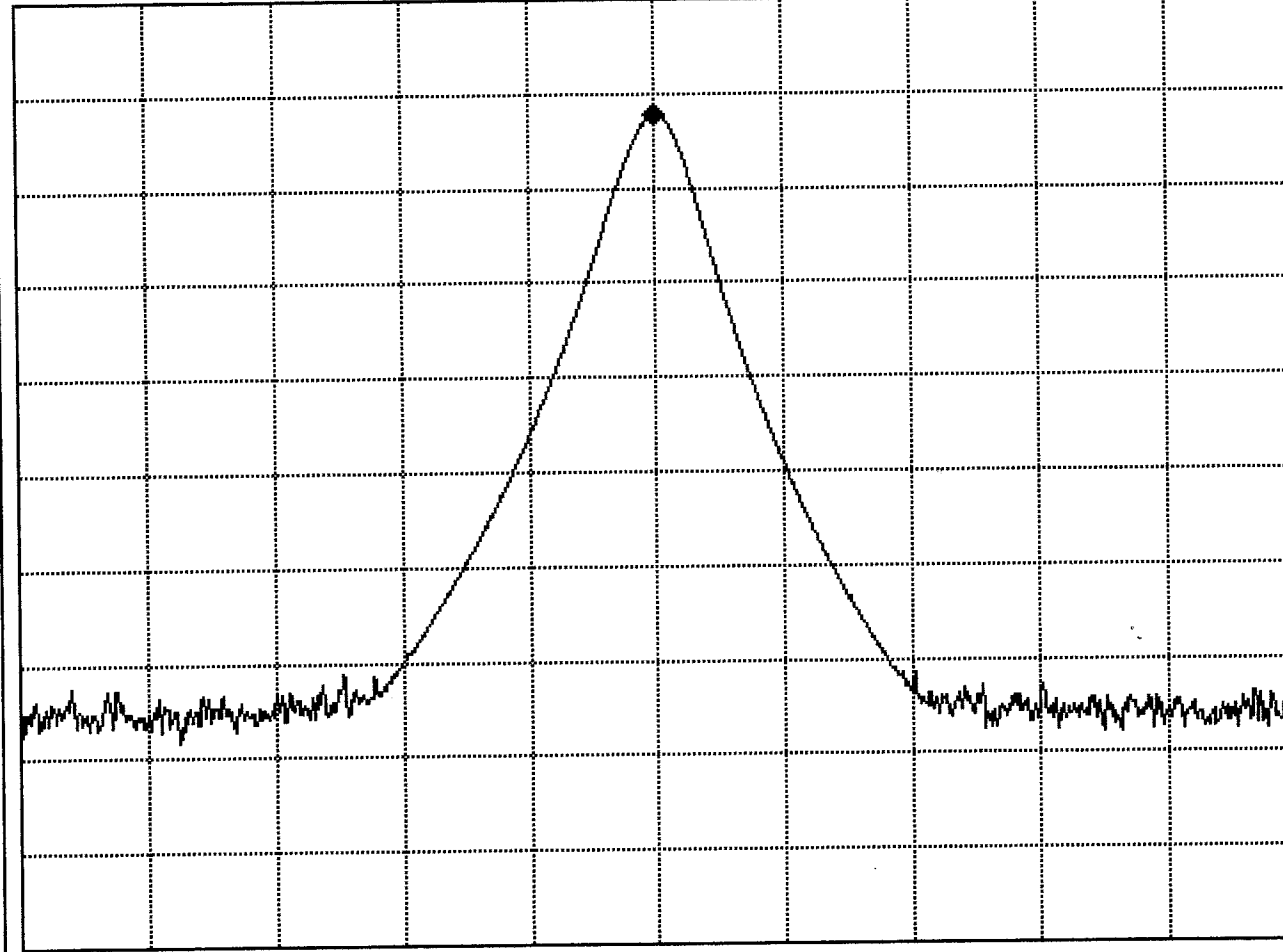
☒ TX
☐ RX
☐ TRX
☐ _____

☒ A
☐ R
☐ M
☐ Info
☐ _____

☐ FE
☐ CPC_
☐ CPR_
☐ MFD
☐ ACP
☒ MB
☐ SEC_
☐ SER_
☐ FS
☐ DC
☐ _____

Fri 2001 Dec 14 09:42

| | |
|--------------------------------|------------------|
| REF 100.0 dB μ V | MKR 135.08 kHz |
| 10dB/ A_View Posi B_Blank Norm | 87.80 dB μ V |



CENTER 135.08 kHz SPAN 30.00 kHz
*RBW 1 kHz VBW 1 kHz SWP 200 ms *ATT 10dB

TX
RX
TRX

☒ A ☐ R ☐ M ☐ Info

☐ FE
☐ CPC
☐ CPR
☐ MFD
☐ ACP
☒ MB
☐ SEC
☐ SER
☐ FS
☐ DC
☐ _____

| | |
|--------------|--------------------|
| Auftragsnr.: | 24502 |
| Kunde: | SIEMENS VDO |
| Gerät: | IMMOBILIZER |
| Modell: | SWY 830A |
| Ser.Nr.: | (01) |
| Norm: | FCL PART 15 |
| Unterpunkt: | SUBPART C (15.203) |
| Messung: | 1700. BANDW. |
| Bemerkung: | TX-MODE, 12 V DC |

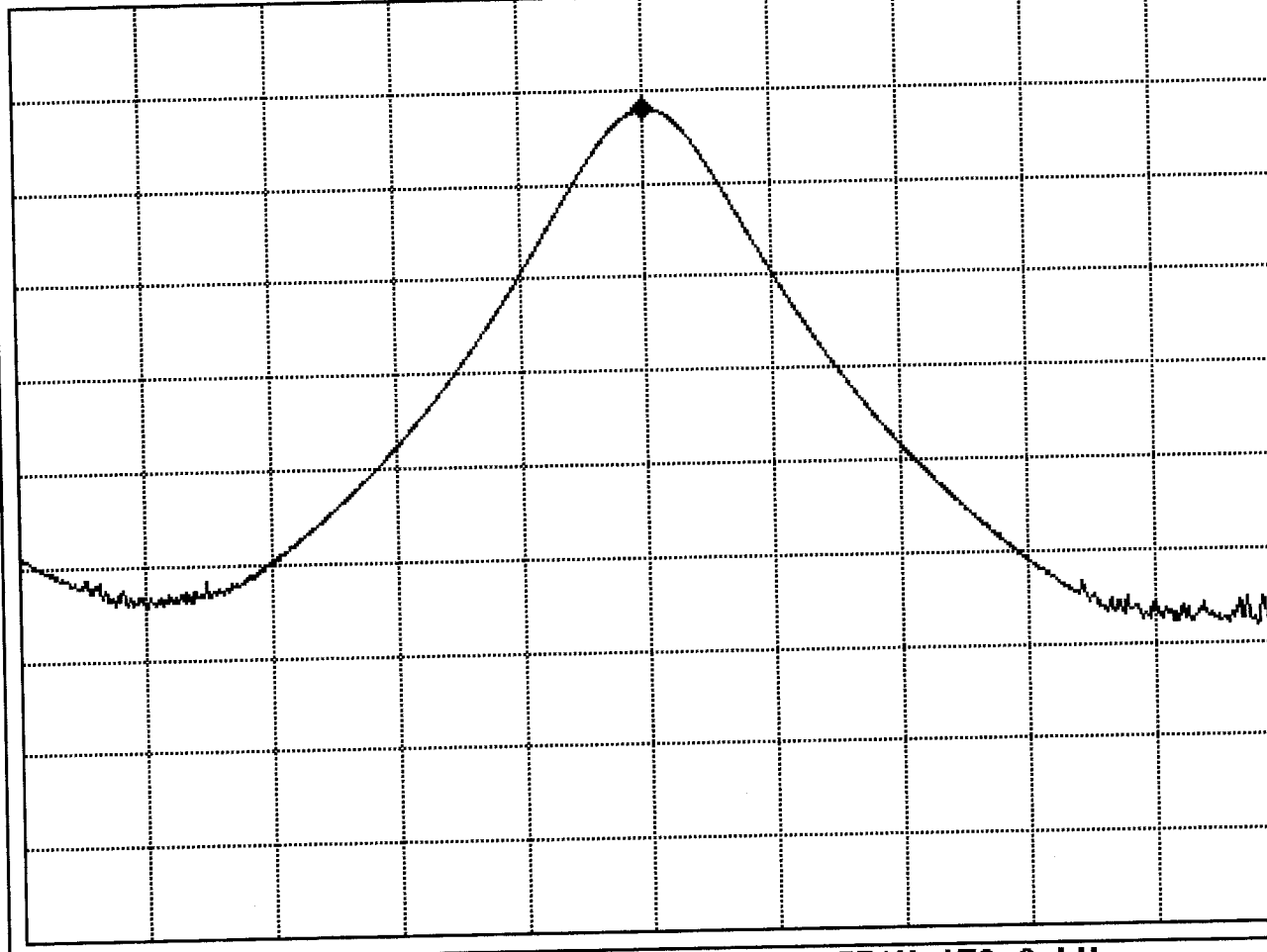
[illegible]

MKR 135.1 kHz
88.02 dBμV

REF 100.0 dB μ V
10dB/ A_V

A_View

| Posi | B | Blank | Norm |
|------|---|-------|------|
|------|---|-------|------|



CENTER 135.0 kHz

*RBW 10 kHz

VBW 10 kHz

SWP 20 ms

SPAN 150.0 kHz

*ATT 10dB

Bemerkung: TX-MODE, 12V DC

[illegible]

| | TX | RX | TRX |
|---|----|----|-----|
| □ | ■ | □ | □ |

☐ A _____
☐ R _____
☐ M _____
☐ Info _____
☐ _____

☐ FE
☐ CPC
☐ CPR
☐ MED
☐ ACP
☒ MB
☐ SEC
☐ SER
☐ FS
☐ DC
☐ _____

Attachment : B

FCC ID:KR55WY8301

List of Test Equipment

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

Test Report No: T 21502-1-01 NF
Beginning of Testing: 05-November-2001

| Test ID | Model Type | Kind of Equipment | Manufacturer | Equipment No. |
|---------|---------------|------------------------|-----------------------------|-----------------|
| CPR1 | PS-2403-D | Power Supply 2 x 40 V | Conrad Elektronik GmbH | 04-07/49-98-001 |
| | FMZB 1516 | Antenna | Schwarzbeck Mess-Elektronik | 04-07/62-90-018 |
| | R 3162 | Spectrum Analyser | Advantest | 04-07/74-00-001 |
| | Turntable 5m | Turntable | EMISYS Vertriebs GmbH | 04-07/92-88-155 |
| MB | HM-8142 | Power Supply | Conrad Elektronik GmbH | 04-07/49-99-002 |
| | HZ-10 | Magnetic Field Antenna | Rohde & Schwarz München | 04-07/62-95-320 |
| | R 3162 | Spectrum Analyser | Advantest | 04-07/74-00-001 |
| SER1 | PS-2403-D | Power Supply 2 x 40 V | Conrad Elektronik GmbH | 04-07/49-98-001 |
| | FMZB 1516 | Antenna | Schwarzbeck Mess-Elektronik | 04-07/62-90-018 |
| | R 3162 | Spectrum Analyser | Advantest | 04-07/74-00-001 |
| | Turntable 5 m | Turntable | EMISYS Vertriebs GmbH | 04-07/92-88-151 |
| SER2 | PS-2403-D | Power Supply 2 x 40 V | Conrad Elektronik GmbH | 04-07/49-98-001 |
| | HCC | Controller Ant.-Mast | Rohde & Schwarz München | 04-07/59-97-001 |
| | RG 214 U | Antenna Cable 2 m | Huber+Suhner | 04-07/60-89-463 |
| | HF 7/8 inch | Antenna Cable 13 m | Huber+Suhner | 04-07/60-99-001 |
| | HF 7/8 inch | Antenna Cable 20 m | Huber+Suhner | 04-07/60-99-002 |
| | HF 7/8 inch | Antenna Cable 40 m | Huber+Suhner | 04-07/60-99-003 |
| | KR - 200 | Coax Antenna Switch | Rosenberger HF-Technik | 04-07/60-99-004 |
| | VULB - 9165 | Super Broadband Antenn | Schwarzbeck Mess-Elektronik | 04-07/62-00-001 |
| | ESVP | Test Receiver | Rohde & Schwarz München | 04-07/63-89-008 |
| | ESVP-EZM | Spectrum Monitor | Rohde & Schwarz München | 04-07/74-86-016 |
| | Turntable 5 m | Turntable | EMISYS Vertriebs GmbH | 04-07/92-88-151 |
| | Antenna Mast | Antenna Mast | Rohde & Schwarz München | 04-07/92-97-001 |

CONSTRUCTIONAL DATAFORM FOR TESTING OF RADIO EQUIPMENT

| | | | |
|-----------------|--|-------------------|--|
| Licence holder: | Siemens VDO Automotive AG | | |
| Address: | Wernerwerkstrasse 2, D-93049 Regensburg, Germany | | |
| Manufacturer: | Siemens Automotive AG | | |
| Address: | Wernerwerkstrasse 2, D-93049 Regensburg, Germany | | |
| Type: | Immobilizer | | |
| Model: | 5WY 8301 | | |
| Serial-No.: | | Protection class: | |

Additional informations to the above named model:

| | | | |
|---|--|------------------|--------|
| Antenna: : : | Type: loop antenna Length/size: 50 mm | | |
| | Type: | | |
| | Length/size: | | |
| | Power supply of the transmitter: Type: | | |
| | vehicle battery | nominal voltage: | 13,8 V |
| | | lowest voltage: | 11.4 V |
| | | highest voltage: | 16,4 V |
| Power supply of the receiver: Type: | | nominal voltage: | V |

Ancillary equipment:

| | | |
|--------------|-------|-------------|
| Description: | Type: | Serial-no.: |
| Description: | Type: | Serial-no.: |
| Description: | Type: | Serial-no.: |

Extreme temperature range in which the approval test should be performed:

- ☒ Category I: General (-20°C to +55°C)
☐ Category II: Portable (-10°C to +55°C)
☐ Category III: Equipment for normal indoor use (0°C to +55°C)

Connectable cables:

| Name of the cable | Digital | Length/m | shielded |
|-------------------|------------|----------|------------|
| | O yes O no | | O yes O no |
| | O yes O no | | O yes O no |
| | O yes O no | | O yes O no |
| | O yes O no | | O yes O no |
| | O yes O no | | O yes O no |

O If applicable, if necessary complete overleaf**Page D1**

| | | | |
|--|---|---|-------------------------------|
| Type designation: 5WY 8301 | | | |
| Name and type designation of individual units comprising the radio equipment: | | | |
| Type of equipment: | | | |
| <input type="checkbox"/> Radiotelephone equipment | <input checked="" type="checkbox"/> Remote-control equipment | <input type="checkbox"/> Radiomaritime equipment | <input type="checkbox"/> LPD |
| <input type="checkbox"/> One-way radiotelephone equipment | <input type="checkbox"/> Inductive loop system | <input type="checkbox"/> Inland waterways equipment | <input type="checkbox"/> RLAN |
| <input type="checkbox"/> Personal paging system | <input type="checkbox"/> Radio-relay system | <input type="checkbox"/> Radionavigation equipment. | <input type="checkbox"/> |
| <input type="checkbox"/> Satellite earth station | <input type="checkbox"/> CB radiotelephone equipment | <input type="checkbox"/> Antenna | <input type="checkbox"/> |
| <input type="checkbox"/> Data transmission equipment | <input type="checkbox"/> Movement detector | <input type="checkbox"/> Aeronautical equipment | <input type="checkbox"/> |
| Technical characteristics: | | | |
| | Transmitter-receiver | Transmitter | Receiver |
| Frequency range | | 125 kHz \pm 0.6 % | |
| Maximum no. of channels | | 1 | |
| Channel spacing | | n.a. | |
| Class of emission (type of modulation) | | K1D | |
| Maximum RF output power | | 42,0 dB μ A/m at 10 meter | |
| Maximum effective radiated power (ERP) | | 22,0 dB μ A/m at 10 meter | |
| Output power variable | | n.a. | |
| Channel switching frequency range | | n.a. | |
| Method of frequency generation | <input type="checkbox"/> Synthesizer <input checked="" type="checkbox"/> Crystal <input type="checkbox"/> Other | | |
| Frequency generation TX | | | |
| Frequency generation RX | | | |
| IF | 1st IF | 2nd IF | 3rd IF |
| Integral selective calling | | | |
| Audio-frequency interface level at external data socket | | | |
| Modes of operation | <input type="checkbox"/> Duplex mode <input type="checkbox"/> Semi-duplex mode <input checked="" type="checkbox"/> Simplex mode | | |
| Power source | <input type="checkbox"/> Mains <input checked="" type="checkbox"/> Vehicle-regulated <input type="checkbox"/> Integral | | |
| Antenna socket | <input type="checkbox"/> BNC <input type="checkbox"/> TNC <input type="checkbox"/> N <input type="checkbox"/> M <input type="checkbox"/> UHF <input type="checkbox"/> Adapter <input type="checkbox"/> None <input type="checkbox"/> <input type="checkbox"/> | | |
| Test specifications: | | | |

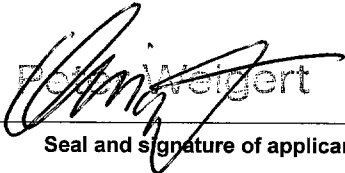
Applicant: Siemens VDO Automotive AG

Model-name: 5WY 8301

Declarations:

- We declare that the above information are correct and the named model was supplied with the maximum configuration to the accredited test laboratory.

Regensburg, 12.12.2001
_____, date
place of issue



Seal and signature of applicant

O If applicable, if necessary complete overleaf

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