

## EMISSION -- TESTREPORT

Testreport file no. : T 19905-1-01 KJ Date of issue : December 13, 2000

Model / Type No. : 5WK4 5032

Type : RF Transmitter

Applicant : SIEMENS Automotive AG

Manufacturer : SIEMENS Automotive AG

Licence holder : SIEMENS Automotive AG

Address : Wernerwerkstrasse 2

D-93049 Regensburg

**Test result** accrdg.  
to the regulation(s)  
at page 3

:

**POSITIVE**

This testreport with appendix consists of 27 pages.  
The testresult only responds to the tested sample. It is not allowed to copy  
this report even partly without the allowance of the testlaboratory.

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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

- o - Part 15 Subpart C (15.209)
- - 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 : Battery Unom = 3 V DC

**STATEMENT OF 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 that can account for a nominal measurement error of  $\pm 4$ dB. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

**SHORT DESCRIPTION OF THE EQUIPMENT UNDER TEST (EUT)**

The 315 MHz RF remote control system consists of a RF transmitter and a RF receiver mounted within the control unit. The RF transmitter is mechanically integrated in the head of the key. This transmitter is used to transmit an information for locking or unlocking the vehicle by an unidirectional RF transmission line for normal remote operation by pressing a button. For passive access functionality the transmitter is able to reply to an inductive command with sending a remote telegramme.

Number of received/tested samples: 2 / 2

Serial Number: Prototype

**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.

**M E A S U R E M E N T P R O T O C O L F O R F C C , V C C I  
A N D A U S T E L**

**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 Error**

The test system for conducted emissions is defined as the LISN, tuned receiver and coaxial cable. The test system for spurious emissions is defined as the antenna, the pre-amplifier, the tuned receiver and the coaxial cable. These test systems have an expected error of  $\pm 3$  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 testresults.

**DISCOVERY OF WORST CASE MEASUREMENT CONDITION:**

The RF transmitter 5WK4 5032 is designed for the operation on the fixed transmitter frequency range of approx. 315 MHz  $\pm$  75 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 RF transmitter.
- 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 RF transmitter.

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

**T E S T R E S U L T****CONDUCTED EMISSIONS - 10/150 kHz - 30 MHz****■ - 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

For TEST EQUIPMENT USED please refer to ATTACHMENT B: \_\_\_\_\_

**Description of Measurement**

The final level, expressed in dB $\mu$ 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 $\mu$ V and  $\mu$ 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 quasipeak detection, and a Line Impedance Stabilization Network (LISN), with 50 $\Omega$  /50  $\mu$ H (CISPR 16) characteristics. Table top equipment is placed on a non-conducting table 80 centimeters above the floor and is positioned 40 centimeters 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 quasipeak and average detection and recorded on the data sheets.

**Testresult**

The requirements are

**0 - MET****0 - 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 quasipeak 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 centimeters above the ground plane. Floor standing equipment is placed directly on the turntable/ground plane. Interface cables that are closer than 40 centimeters to the ground plane are bundled in the center in a serpentine fashion so they are at least 40 centimeters 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 polarizations and the EUT are rotated 360 degrees.

#### **SPURIOUS EMISSION (MAGNETIC FIELD) 9 kHz - 30 MHz**

##### **■ - Test not applicable**

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

For TEST EQUIPMENT USED please refer to ATTACHMENT B: \_\_\_\_\_

#### **Description of Measurement**

The final level, expressed in dBµV/m, is arrived at by taking the reading from the EMI receiver (Level dBµV) 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<br>(MHz) | Level<br>(dBµV) | + | Factor<br>(dB) | = | Level<br>(dBµV/m) | Limit<br>(dBµV/m) | = | Delta<br>(dB) |
| 1.705              | 5               | + | 20             | = | 25                | 30                | = | 5             |

**Testresult in detail:**

| Frequency<br>[MHz] | L: PK<br>[dBµV] | L: AV<br>[dBµV] | L: QP<br>[dBµV] | Correct.<br>[dB] | L: PK<br>[dBµV/m] | L: AV<br>[dBµV/m] | L: QP<br>[dBµV/m] | Limit<br>[dBµV/m] |
|--------------------|-----------------|-----------------|-----------------|------------------|-------------------|-------------------|-------------------|-------------------|
|                    |                 |                 |                 |                  |                   |                   |                   |                   |
|                    |                 |                 |                 |                  |                   |                   |                   |                   |
|                    |                 |                 |                 |                  |                   |                   |                   |                   |

The requirements are

**0 - MET****0 - NOT MET**

Min. limit margin

\_\_\_\_\_ dB

\_\_\_\_\_ MHz

Max. limit exceeding

\_\_\_\_\_ dB

\_\_\_\_\_ MHz

Remarks: NOT APPLICABLE

**SPURIOUS EMISSIONS (electric field) 30 MHz - 1000 MHz**

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

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

For TEST EQUIPMENT USED please refer to ATTACHMENT B: SER2

**Description of Measurement**

The final level, expressed in dBµV/m, is arrived by taking the reading from the EMI receiver (Level dBµV) 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<br>(MHz) | Level<br>(dBµV) | + | Factor<br>(dB) | = | Level<br>(dBµV/m) | Limit<br>(dBµV/m) | = | Delta<br>(dB) |
| 719                | 75              | + | 32.6           | = | 107.6             | 110               | = | -2.4          |

| Frequency<br>[MHz] | L: PK<br>[dBµV] | L: AV<br>[dBµV] | L: QP<br>[dBµV] | Correct.<br>[dB] | L: PK<br>[dBµV/m] | L: AV<br>[dBµV/m] | L: QP<br>[dBµV/m] | Limit<br>[dBµV/m] |
|--------------------|-----------------|-----------------|-----------------|------------------|-------------------|-------------------|-------------------|-------------------|
| 630.04             | 9.8             | 6.4             | 6.6             | 27.6             | 37.4              | 34.0              | 34.2              | 55.6              |
|                    |                 |                 |                 |                  |                   |                   |                   |                   |
|                    |                 |                 |                 |                  |                   |                   |                   |                   |

# Testresult

The requirements are

■ - MET

○ - NOT MET

Min. limit margin

>5 dB

30-1000 MHz

Max. limit exceeding

           dB

           MHz

Remarks:   The limits are kept.  

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**SPURIOUS EMISSION 1 GHz - 18 GHz**

|                         |
|-------------------------|
| ■ - Test not applicable |
|-------------------------|

**Testlocation :**

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

For TEST EQUIPMENT USED please refer to ATTACHMENT B: SER3

**Description of Measurement**

The final level, expressed in dB $\mu$ V/m, is arrived by taking the reading from the Spectrumalyzer in dB $\mu$ 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 EMC0 3115 | correction Amplifier AwT 4534 + cable | Correction factor (summarized) | corrected level   |
|--------------------------|----------------------|---------------------------------------|--------------------------------|-------------------|
| 56 dB $\mu$ V            | +27.3 dB             | -41.2 dB                              | -15.8 dB                       | 42.1 dB $\mu$ V/m |

**Testresult in detail:**

| Frequency [MHz] | L: PK [dB $\mu$ V] | L: AV [dB $\mu$ V] | L: QP [dB $\mu$ V] | Correct. [dB] | L: PK [dB $\mu$ V/m] | L: AV [dB $\mu$ V/m] | L: QP [dB $\mu$ V/m] | Limit [dB $\mu$ V/m] |
|-----------------|--------------------|--------------------|--------------------|---------------|----------------------|----------------------|----------------------|----------------------|
| 1260            | 50.2               | 40.7               | -                  | -15.5         | 34.7                 | 25.2                 | -                    | 55.6                 |
| 1575            | 55.5               | 43.9               | -                  | -14.9         | 40.6                 | 29.0                 | -                    | 54.0                 |
| 1890            | 57.5               | 46.6               | -                  | -12.8         | 44.7                 | 33.8                 | -                    | 55.6                 |
| 2205            | 45.6               | 42.7               | -                  | -11.3         | 34.3                 | 31.4                 | -                    | 54.0                 |
| 2835            | 52.3               | 45.4               | -                  | -10.1         | 42.2                 | 35.3                 | -                    | 54.0                 |
| 3150            | 52.8               | 40.8               | -                  | -9.3          | 43.5                 | 31.5                 | -                    | 55.6                 |
|                 |                    |                    |                    |               |                      |                      |                      |                      |

## Testresult

The requirements are

■ - MET

**0 - NOT MET**

Min. limit margin

>5 dB

1-3.15 GHz

Max. limit exceeding

\_\_\_\_\_ dB

\_\_\_\_\_ GHz

Remarks: The limits are met.

The measurement was performed up to the 10<sup>th</sup> harmonic

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**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 EQUIPMENT USED please refer to ATTACHMENT B: CPR2

**Description of Measurement**

The final level, expressed in dB $\mu$ V/m, is arrived by taking the reading from the EMI receiver (Level dB $\mu$ 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<br>(MHz) | Level<br>(dB $\mu$ V) | + | Factor<br>(dB) | = | Level<br>(dB $\mu$ V/m) | - | Limit<br>(dB $\mu$ V/m) | = | Delta<br>(dB) |
| 315                | 45                    | + | 22.5           | = | 67.5                    | - | 74.3                    | = | -6.8          |

**Testresult in detail:**

| Frequency<br>[MHz] | L: PK<br>[dB $\mu$ V] | L: AV<br>[dB $\mu$ V] | L: QP<br>[dB $\mu$ V] | Correct.<br>[dB] | L: PK<br>[dB $\mu$ V/m] | L: AV<br>[dB $\mu$ V/m] | L: QP<br>[dB $\mu$ V/m] | Limit<br>[dB $\mu$ V/m] |
|--------------------|-----------------------|-----------------------|-----------------------|------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| 315.018            | 54.8                  | 54.6                  | 53.3                  | 20.5             | 75.3                    | 75.1                    | 73.8                    | 75.6                    |
|                    |                       |                       |                       |                  |                         |                         |                         |                         |
|                    |                       |                       |                       |                  |                         |                         |                         |                         |

**Testresult**

The requirements are

■ - MET

o - NOT MET

Min. limit margin

0.5 dB

315.018 MHz

Max. limit exceeding

\_\_\_\_\_ 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 EQUIPMENT USED please refer to ATTACHMENT B: \_\_\_\_\_

**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

**0 - MET**

**0 - 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:

- o - Standby
- o - Testprogram (H - Pattern)
- o - Testprogram (color bar)
- o - Testprogram (customer specific)
- - Transmit in the frequency range of 315 MHz  $\pm$  75 kHz.
- o - \_\_\_\_\_
- o - \_\_\_\_\_

### **Configuration of the equipment under test:**

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

- |           |              |
|-----------|--------------|
| o - _____ | Type : _____ |
| o - _____ | Type : _____ |
| o - _____ | Type : _____ |
| o - _____ | Type : _____ |
| o - _____ | Type : _____ |
| o - _____ | Type : _____ |
- 
- o - unshielded power cable
  - o - unshielded cables
  - o - shielded cables                      MPS.No.:
  - o - customer specific cables
  - o - \_\_\_\_\_
  - o - \_\_\_\_\_

**SUMMARY**

**GENERAL REMARKS:**

The product 5WK4 5032 has been tested on the following frequency:  
TX-Mode: frequency 315 MHz

**FINAL JUDGEMENT:**

The requirements according to the technical regulations and tested 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.

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

Testing Start Date : December 4, 2000

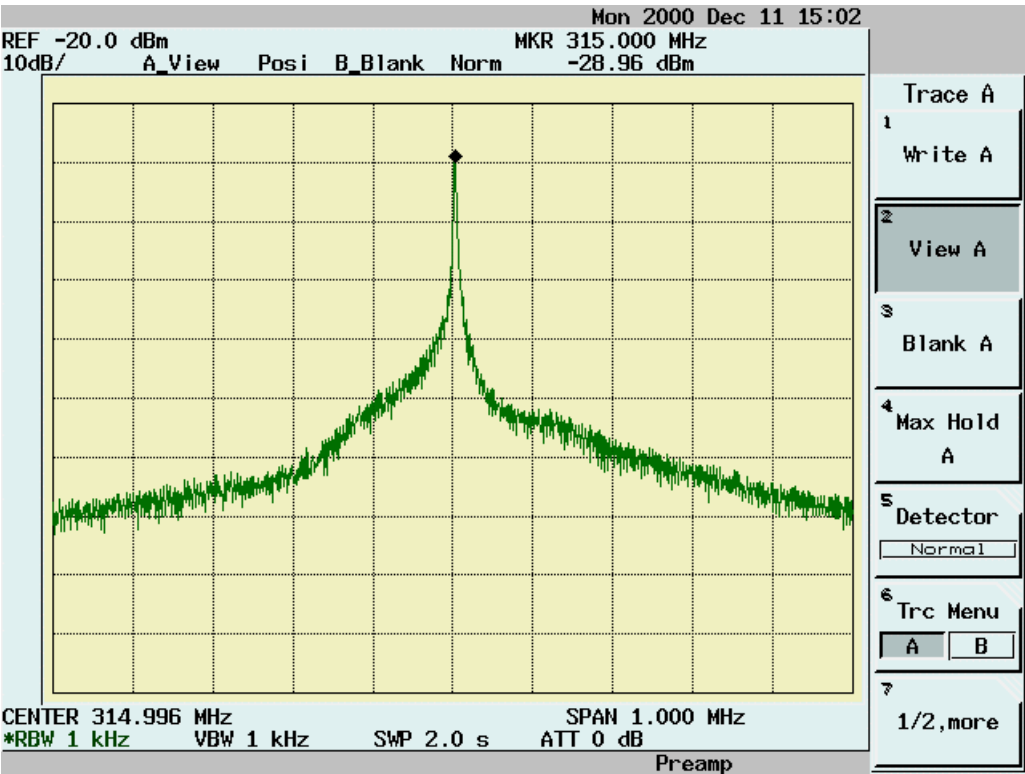
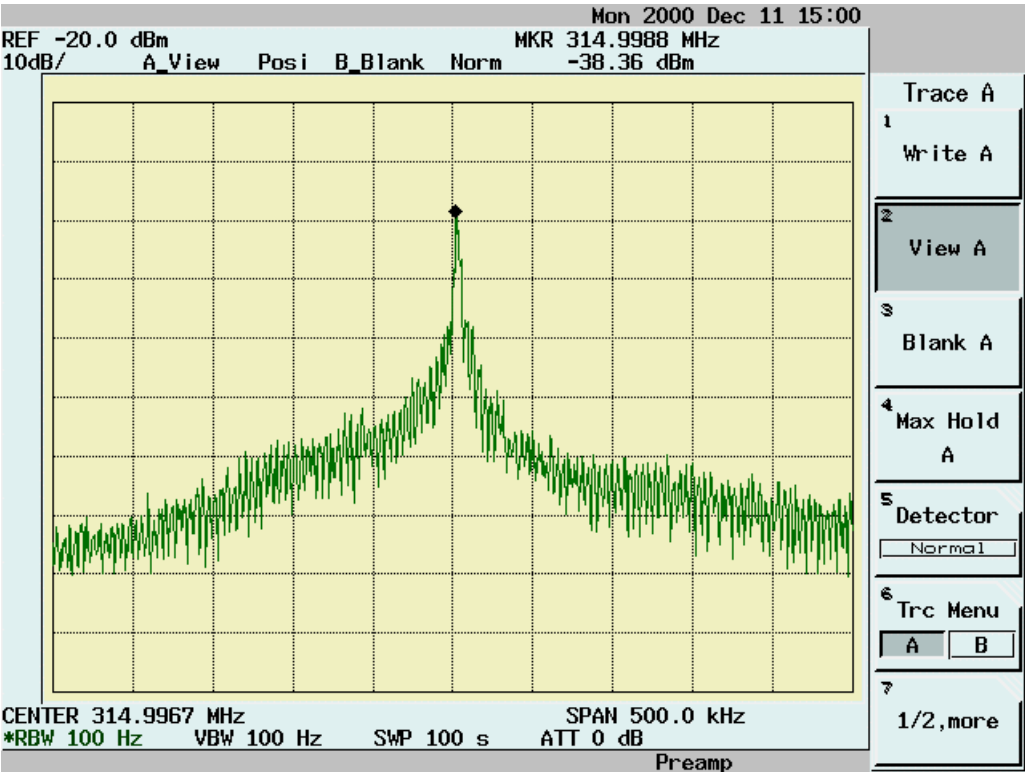
Testing End Date : December 11, 2000

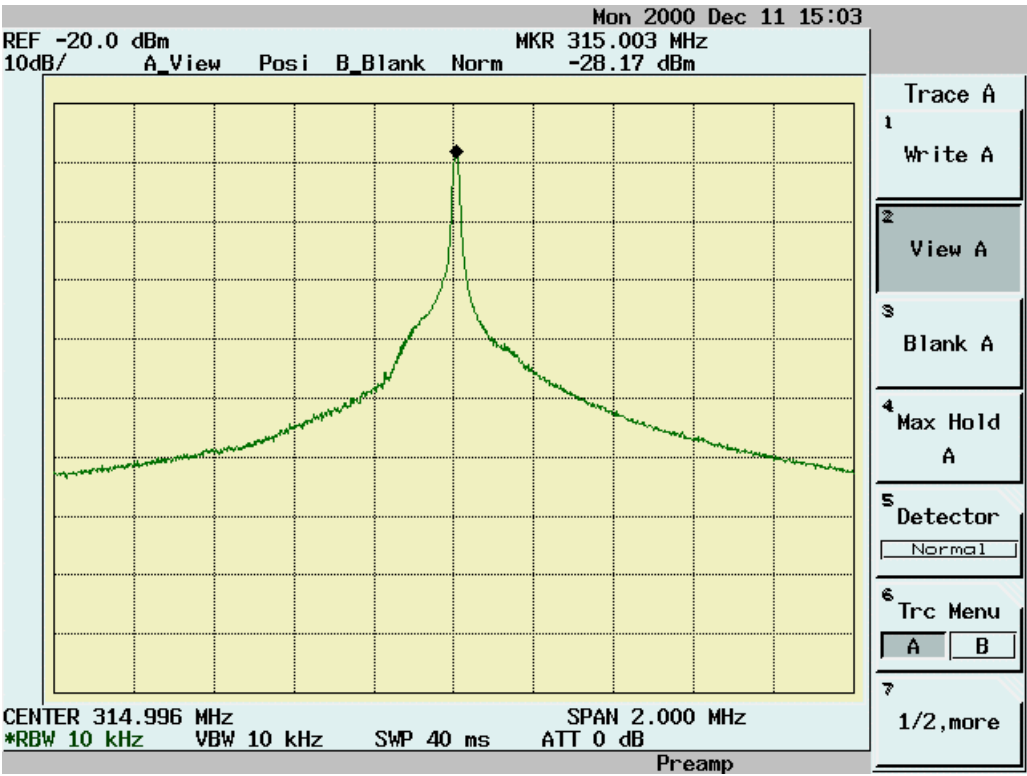
- MIKES BABT PRODUCT SERVICE GmbH -

Test-engineer

  
Günter Mikes  
Dipl.-Ing.(FH)

  
Josef Knab





# Attachment : B

FCC ID KR55WK45032 \_

## List of Test Equipment

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

Test Report No: T 19905-1-01 KJ  
Beginning of Testing: 04-Dezember-2000

| Test ID | Model Type        | Kind of Equipment     | Manufacturer                | Equipment No.   |
|---------|-------------------|-----------------------|-----------------------------|-----------------|
| CPR2    | HCC               | Controller Ant.-Mast  | Rohde & Schwarz             | 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-Anten | Schwarzbeck G.              | 04-07/62-00-001 |
|         | ESVP              | Test Receiver         | Rohde & Schwarz             | 04-07/63-89-008 |
|         | ESVP-EZM          | Spectrum Monitor      | Rohde & Schwarz             | 04-07/74-86-016 |
|         | Antennenmast      | Antenna mast          | Rohde & Schwarz             | 04-07/92-97-001 |
| MB      | 433 MHz-Antenna   | Rod Antenna           | MIKES PRODUCT SERVICE       | 04-07/62-97-002 |
|         | R 3162            | Spectrum Analyzer     | Advantest                   | 04-07/74-00-001 |
| SER2    | HCC               | Controller Ant.-Mast  | Rohde & Schwarz             | 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-Anten | Schwarzbeck G.              | 04-07/62-00-001 |
|         | ESVP              | Test Receiver         | Rohde & Schwarz             | 04-07/63-89-008 |
|         | ESVP-EZM          | Spectrum Monitor      | Rohde & Schwarz             | 04-07/74-86-016 |
|         | Antennenmast      | Antenna mast          | Rohde & Schwarz             | 04-07/92-97-001 |
| SER3    | Sucoflex 104, SMA | RF-cable 2 m          | Huber+Suhner                | 04-07/60-97-485 |
|         | Sucoflex 104, N   | RF-cable 3 m          | Huber+Suhner                | 04-07/60-97-492 |
|         | Model 3115        | Hornantenna           | EMCO Elektronik GmbH        | 04-07/62-96-458 |
|         | AWT-4534          | Microwave-Amplifier   | TransTech Hochfrequenztechn | 04-07/66-90-217 |
|         | R 3162            | Spectrum Analyzer     | Advantest                   | 04-07/74-00-001 |

**CONSTRUCTIONAL DATAFORM FOR TESTING OF RADIO EQUIPMENT**

|                 |                                                  |                   |  |
|-----------------|--------------------------------------------------|-------------------|--|
| Licence holder: | Siemens Automotive AG                            |                   |  |
| Address:        | Wernerwerkstrasse 2, D-93049 Regensburg, Germany |                   |  |
| Manufacturer:   | Siemens Automotive AG                            |                   |  |
| Address:        | Wernerwerkstrasse 2, D-93049 Regensburg, Germany |                   |  |
| Type:           | RF Transmitter                                   |                   |  |
| Model:          | 5WK4 5032                                        |                   |  |
| Serial-No.:     |                                                  | Protection class: |  |

**Additional informations to the above named model:**

|                                                  |                        |
|--------------------------------------------------|------------------------|
| <b>Antenna:</b><br>transmitter:                  | Type: integral         |
|                                                  | Length/size: 5 cm      |
| receiver:                                        | Type:                  |
|                                                  | Length/size:           |
| <b>Power supply of the transmitter:</b><br>Type: | nominal voltage: 3 V   |
|                                                  | lowest voltage: 2,4 V  |
|                                                  | highest voltage: 3,2 V |
|                                                  |                        |
| <b>Power supply of the receiver:</b><br>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                                           |
|-------------------|----------------------------------------------------|----------|----------------------------------------------------|
|                   | <input type="radio"/> yes <input type="radio"/> no |          | <input type="radio"/> yes <input type="radio"/> no |
|                   | <input type="radio"/> yes <input type="radio"/> no |          | <input type="radio"/> yes <input type="radio"/> no |
|                   | <input type="radio"/> yes <input type="radio"/> no |          | <input type="radio"/> yes <input type="radio"/> no |
|                   | <input type="radio"/> yes <input type="radio"/> no |          | <input type="radio"/> yes <input type="radio"/> no |
|                   | <input type="radio"/> yes <input type="radio"/> no |          | <input type="radio"/> yes <input type="radio"/> no |

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

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|                                                                                                        |                                                                                                                                                                                                                                                       |                                                     |                               |
|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|-------------------------------|
| <b>Type designation:</b><br>5WK4 5032                                                                  |                                                                                                                                                                                                                                                       |                                                     |                               |
| <b>Name and type designation of individual units comprising the radio equipment:</b><br>Not applicable |                                                                                                                                                                                                                                                       |                                                     |                               |
| <b>Type of equipment:</b>                                                                              |                                                                                                                                                                                                                                                       |                                                     |                               |
| <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"/>      |
| <b>Technical characteristics:</b>                                                                      |                                                                                                                                                                                                                                                       |                                                     |                               |
|                                                                                                        | Transmitter-receiver                                                                                                                                                                                                                                  | Transmitter                                         | Receiver                      |
| Frequency range                                                                                        |                                                                                                                                                                                                                                                       | 315 MHz $\pm$ 75 kHz                                |                               |
| Maximum no. of channels                                                                                |                                                                                                                                                                                                                                                       | 1                                                   |                               |
| Channel spacing                                                                                        |                                                                                                                                                                                                                                                       | /                                                   |                               |
| Class of emission (type of modulation)                                                                 |                                                                                                                                                                                                                                                       | K1D                                                 |                               |
| Maximum RF output power                                                                                |                                                                                                                                                                                                                                                       | 0 dBm                                               |                               |
| Maximum effective radiated power (ERP)                                                                 |                                                                                                                                                                                                                                                       | < 1 mW                                              |                               |
| Output power variable                                                                                  |                                                                                                                                                                                                                                                       | not applicable                                      |                               |
| Channel switching frequency range                                                                      |                                                                                                                                                                                                                                                       | not applicable                                      |                               |
| 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 type="checkbox"/> Vehicle-regulated <input checked="" type="checkbox"/> Integral                                                                                                                                |                                                     |                               |
| Antenna socket                                                                                         | <input type="checkbox"/> BNC <input type="checkbox"/> TNC <input type="checkbox"/> N<br><input type="checkbox"/> M <input type="checkbox"/> UHF <input type="checkbox"/> Adapter<br><input checked="" type="checkbox"/> None <input type="checkbox"/> |                                                     |                               |
| <b>Test specifications:</b>                                                                            |                                                                                                                                                                                                                                                       |                                                     |                               |

O If applicable, if necessary complete overleaf

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**Declarations:**

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

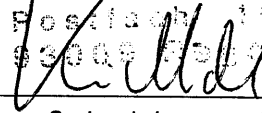
Regensburg,

19.12.2000

,date

place of issue

SIEMENS Aktiengesellschaft  
Bereich Automobiltechnik  
Postfach 10 00 30  
93009 Regensburg



Seal and signature of applicant