

## **Akkreditiertes Prüflaboratorium**

**DAR-Registriernummer:  
TTI-P-G 166/98**

**Test report no.: 2\_2468-A/01**  
**Additional test report to: 2\_2356-B/00**  
**FCC Rule 15.225**  
**ID ISC.ANT300/300A, ID ISC.ANT1400/700A**  
**ID ISC.ANT800/600A**

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### **1 General information**

#### **1.1 Notes**

The test results of this test report relate exclusively to the test item specified in 1.5. The CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalisations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the CETECOM ICT Services GmbH.

## 1.2 Testing laboratory

CETECOM ICT Services GmbH

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Deutschland

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E-mail : Michael.Berg@ict.cetecom.de

Internet : www.cetecom.de

**Accredited testing laboratory**

**DAR-registration number : TTI-P-G-166/98**

## 1.3 Details of applicant

**Name** : FEIG ELECTRONIC GmbH

**Street** : Lange Straße 4

**City** : D-35781 Weilburg-Waldhausen

**Country** : Germany

**Telephone** : +49 (0)6471 / 3109-0

**Telefax** : +49 (0)6471 / 3109-99

**Contact** : Mr. Elmar Reichwein

**Telephone:** +49 (0)6471 / 3109-38

## 1.4 Application details

Date of receipt of application : 08.12.00

Date of receipt of test item : 12.12.00

Date of test : 12.12.00

## 1.5 Test item

Type of equipment : **Antennas for transponder reader system ID ISC.LRM200**

Type designation : **ID ISC.ANT300/300A; ID ISC.ANT1400/700A, ID  
ISC.ANT800/600A with power splitter ID ISC.ANT PS**

Manufacturer :

Street :

City :

Country :

Serial number :

**Additional informations: :**

Frequency : **13,56 MHz**

Number of channels : **1**

Antenna : **Inductive loop antenna**

Power supply : **24V DC / 1,4 A ext.**

Type of equipment :

Carrier power : **1,78 mW ERP / 2,85 mW EIRP**

## 1.6 Test standards: FCC Rule Part 15.225

## 2 Technical test

### 2.1 Summary of test results

No deviations from the technical specification(s) were ascertained in the course of the tests performed.

Technical responsibility for area of testing :

23.12.99 RSC8411 Berg M.



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| Date | Section | Name | Signature |
|------|---------|------|-----------|
|------|---------|------|-----------|

23.12.99 RSC8414 Ames H.



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| Date | Section | Name | Signature |
|------|---------|------|-----------|
|------|---------|------|-----------|

## **2.2 Test report**

### **TEST REPORT**

**FCC Rule Part 15.225**

**Test report no. : 2\_2468-A/01**

## TEST REPORT REFERENCE

### LIST OF MEASUREMENTS

| SUBCLAUSE    | PARAMETER TO BE MEASURED                                    | PAGE                        |
|--------------|-------------------------------------------------------------|-----------------------------|
|              | Transmitter parameters                                      |                             |
| § 15.225 (a) | Field strength of fundamental                               | 7                           |
| § 15.209     | Emissions radiated outside of the specified frequency bands | 8                           |
|              | Band edge compliance                                        | see test report 2_2356-B/00 |
| § 15.225 (c) | Frequency tolerance                                         | see test report 2_2356-B/00 |
|              | Test equipment listing                                      | 12                          |
|              | Photographs of the equipment                                | 14                          |

**Equipment under test** : ID ISC.ANT300/300A; ID ISC.ANT1400/700A,  
ID ISC.ANT800/600A with power splitter ID ISC.ANT PS

**Ambient temperature** : 23 °C

**Relative humidity** : 32%

## FIELD STRENGTH OF FUNDAMENTIAL

## SUBCLAUSE § 15.225 (a)

**Polarisation of the measurements for the larger power level .: vertical**  
**Measurement distance 30 m**

| TEST CONDITIONS                                                               |                   | FIELD STRENGTH (µV/m )        |                               |                                                            |
|-------------------------------------------------------------------------------|-------------------|-------------------------------|-------------------------------|------------------------------------------------------------|
| Frequency (MHz)                                                               |                   | ID ISC.ANT300/300A            | ID ISC.ANT1400/700A           | ID ISC.ANT800/600A<br>with power splitter ID<br>ISC.ANT PS |
| $T_{nom}(23) ^\circ C$                                                        | $V_{nom}(24.0) V$ | QP:10,000µV/m<br>80.00 dBµV/m | QP:5623.4µV/m<br>75.00 dBµV/m | QP:10,000µV/m<br>80.00 dBµV/m                              |
| Maximum deviation from output<br>power under extreme test<br>conditions (dBc) |                   | -0,18                         | -0,18                         | -0,18                                                      |
| Measurement uncertainty                                                       |                   | ±3dB                          |                               |                                                            |

## Limits

## SUBCLAUSE § 15.225 (a)

| Frequency (MHz) | Field strength (µV/m) | Measurement distance (m) |
|-----------------|-----------------------|--------------------------|
| 13,56           | 10,000<br>80 dBµV/m   | 30                       |

## REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

42 , 65

Equipment under test : ID ISC.ANT300/300A; ID ISC.ANT1400/700A,  
ID ISC.ANT800/600A with power splitter ID ISC.ANT PS

Ambient temperature : 23 °C

Relative humidity : 32%

## EMISSIONS RADIATED

SUBCLAUSE §15.209

Transmitter operating

Modulated/Unmodulated\*

\*(Delete whichever is inappropriate)

Measurement distance see table

| SPURIOUS EMISSIONS LEVEL (µV/m) |          |                 |                     |          |                 |                                                         |          |                 |
|---------------------------------|----------|-----------------|---------------------|----------|-----------------|---------------------------------------------------------|----------|-----------------|
| ID ISC.ANT300/300A              |          |                 | ID ISC.ANT1400/700A |          |                 | ID ISC.ANT800/600A with power splitter<br>ID ISC.ANT PS |          |                 |
| f<br>(MHz)                      | Detector | Level<br>(µV/m) | f<br>(MHz)          | Detector | Level<br>(µV/m) | f<br>(MHz)                                              | Detector | Level<br>(µV/m) |
| 27.12                           | QP       | 28.18           | 27.12               | QP       | 18.84           | 27.12                                                   | QP       | 29,85           |
| 150.54                          | QP       | 14.96           | 40.68               | QP       | 53.09           | 150.54                                                  | QP       | 26.61           |
| 265.40                          | QP       | 23.44           | 150.54              | QP       | 35.48           | 250.28                                                  | QP       | 56.23           |
| 350.67                          | QP       | 63.10           | 250.28              | QP       | 40.27           | 265.40                                                  | QP       | 46.24           |
| 400.14                          | QP       | 30.20           | 265.40              | QP       | 41.21           | 285.59                                                  | QP       | 29.51           |
|                                 |          |                 | 350.67              | QP       | 74.13           | 350.67                                                  | QP       | 46.24           |
|                                 |          |                 | 400.14              | QP       | 14.29           |                                                         |          |                 |
|                                 |          |                 |                     |          |                 |                                                         |          |                 |
|                                 |          |                 |                     |          |                 |                                                         |          |                 |
|                                 |          |                 |                     |          |                 |                                                         |          |                 |
| Measurement uncertainty         |          |                 | ± 3dB               |          |                 |                                                         |          |                 |

## Limits

SUBCLAUSE § 15.209

| Frequency (MHz) | Field strength (µV/m) | Measurement distance (m) |
|-----------------|-----------------------|--------------------------|
| 0.009 - 0.490   | 2400/F(kHz)           | 300                      |
| 0.490 - 1.705   | 24000/F(kHz)          | 30                       |
| 1.705 - 30.0    | 30                    | 30                       |
| 30 - 88         | 100                   | 3                        |
| 88 - 216        | 150                   | 3                        |
| 216 - 960       | 200                   | 3                        |
| above 960       | 500                   | 3                        |

## REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

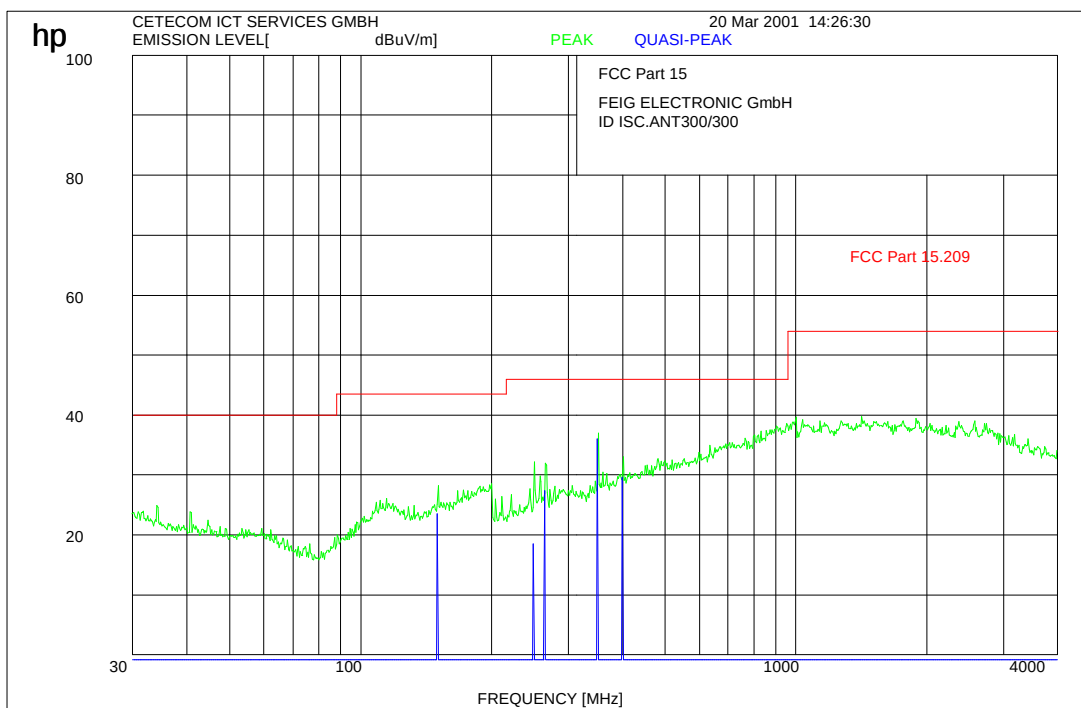
**Equipment under test** : ID ISC.ANT300/300A

**Ambient temperature** : 23 °C

**Relative humidity** : 32%

## EMISSIONS RADIATED

## SUBCLAUSE §15.209



## REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 - 24

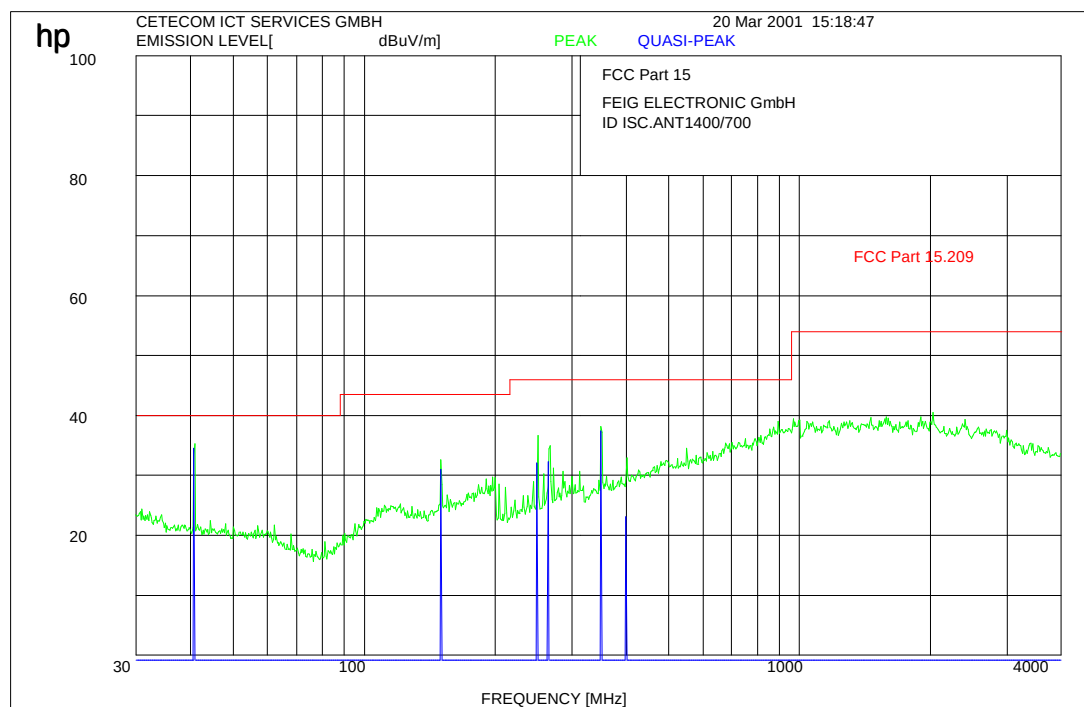
**Equipment under test** : ID ISC.ANT1400/700A

**Ambient temperature** : 23 °C

**Relative humidity** : 32%

## EMISSIONS RADIATED

## SUBCLAUSE §15.209



## REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17-24

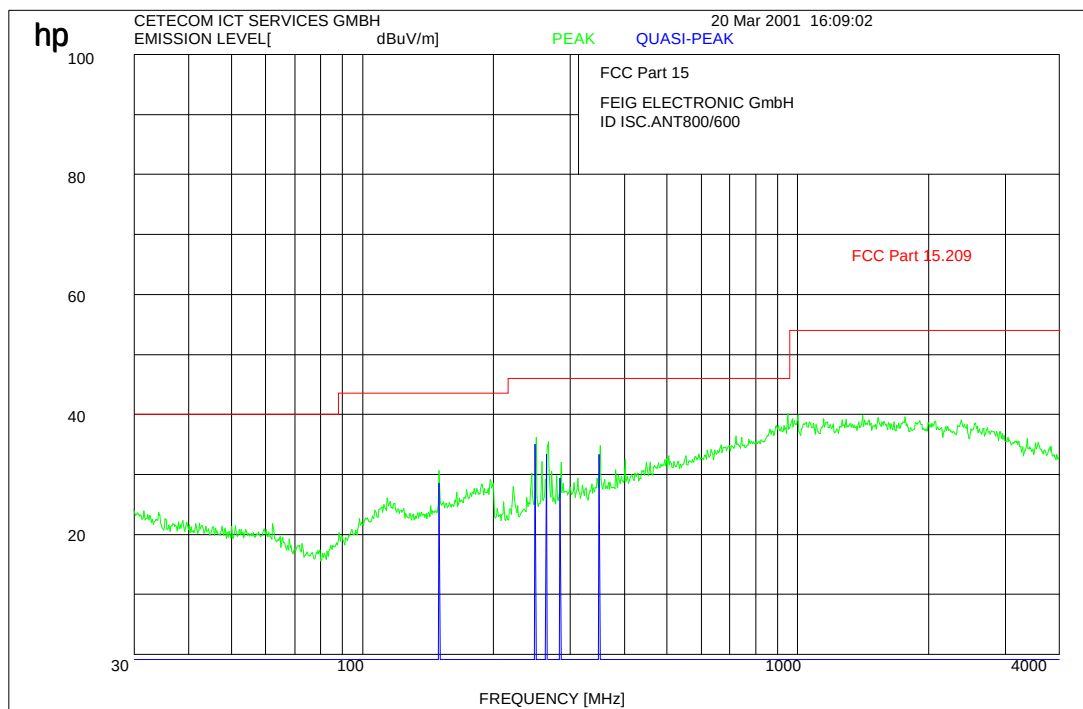
**Equipment under test : ID ISC.ANT800/600A with Power Splitter**

**Ambient temperature : 23 °C**

**Relative humidity : 32%**

## EMISSIONS RADIATED

## SUBCLAUSE §15.209



## REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17-24

**TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS**

To simplify the identification on each page of the test equipment used, on each page of the test report, each item of test equipment and ancillaries such as cables are identified (numbered) by the Test Laboratory, below.

| No | Instrument/Ancillary  | Type      | Manufacturer    | Serial No.  |
|----|-----------------------|-----------|-----------------|-------------|
| 01 | Spectrum Analyzer     | 8566 A    | Hewlett-Packard | 1925A00257  |
| 02 | Analyzer Display      | 8566 A    | Hewlett-Packard | 1925A00860  |
| 03 | Oscilloscope          | 7633      | Tektronix       | 230054      |
| 04 | Radio Analyzer        | CMTA 54   | Rohde & Schwarz | 894 043/010 |
| 05 | System Power Supply   | 6038 A    | Hewlett-Packard | 2848A07027  |
| 06 | Signal Generator      | 8111 A    | Hewlett-Packard | 2215G00867  |
| 07 | Signal Generator      | 8662 A    | Hewlett-Packard | 2224A01012  |
| 08 | Funktionsgenerator    | AFGU      | Rohde & Schwarz | 862 480/032 |
| 09 | Regeltrenntrafo       | MPL       | Erfi            | 91350       |
| 10 | Netznachbildung       | NNLA 8120 | Schwarzbeck     | 8120331     |
| 11 | Relais-Matrix         | PSU       | Rohde & Schwarz | 893 285/020 |
| 12 | Power-Meter           | 436 A     | Hewlett-Packard | 2101A12378  |
| 13 | Power-Sensor          | 8484 A    | Hewlett-Packard | 2237A10156  |
| 14 | Power-Sensor          | 8482 A    | Hewlett-Packard | 2237A00616  |
| 15 | Modulationsmeter      | 9008      | Racal-Dana      | 2647        |
| 16 | Frequenzzähler        | 5340 A    | Hewlett-Packard | 1532A03899  |
| 17 | Absorber Schirmkabine | ---       | MWB             | 87400/002   |
| 18 | Spectrum Analyzer     | 85660 B   | Hewlett-Packard | 2747A05306  |
| 19 | Analyzer Display      | 85662 A   | Hewlett-Packard | 2816A16541  |
| 20 | Quasi Peak Adapter    | 85650 A   | Hewlett-Packard | 2811A01131  |
| 21 | RF-Preselector        | 85685 A   | Hewlett-Packard | 2833A00768  |
| 22 | Biconical Antenne     | 3104      | Emco            | 3758        |
| 23 | Log. Per. Antenne     | 3146      | Emco            | 2130        |
| 24 | Double Ridge Horn     | 3115      | Emco            | 3088        |
| 25 | EMI-Testreceiver      | ESAI      | Rohde & Schwarz | 863 180/013 |
| 26 | EMI-Analyzer-Display  | ESAI-D    | Rohde & Schwarz | 862 771/008 |
| 27 | Biconical Antenne     | HK 116    | Rohde & Schwarz | 888 945/013 |
| 28 | Log. Per. Antenne     | HL 223    | Rohde & Schwarz | 825 584/002 |
| 29 | Relais-Switch-Unit    | RSU       | Rohde & Schwarz | 375 339/002 |
| 30 | Highpass              | HM985955  | FSY Microwave   | 001         |
| 31 | Amplifier             | P42-GA29  | Tron-Tech       | B 23602     |
| 32 | Absorber Schirmkabine |           | Frankonia       |             |
| 33 | Steuerrechner         | PSM 7     | Rohde & Schwarz | 834 621/004 |
| 34 | EMI Test Reciever     | ESMI      | Rohde & Schwarz | 827 063/010 |
| 35 | EMI Test Receiver     | Display   | Rohde & Schwarz | 829 808/010 |

## TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

To simplify the identification on each page of the test equipment used, on each page of the test report, each item of test equipment and ancillaries such as cables are identified (numbered) by the Test Laboratory, below.

| No | Instrument/Ancillary                   | Type      | Manufacturer    | Serial No.  |
|----|----------------------------------------|-----------|-----------------|-------------|
| 36 | Controler                              | HD 100    | Deisel          | 100/322/93  |
| 37 | Relais Matrix                          | PSN       | Rohde & Schwarz | 829 065/003 |
| 38 | Control Unit                           | GB 016 A2 | Rohde & Schwarz | 344 122/008 |
| 39 | Relais Switch Unit                     | RSU       | Rohde & Schwarz | 316 790/001 |
| 40 | Power Supply                           | 6032A     | Hewlett Packard | 2846A04063  |
| 41 | Spektrum Monitor                       | EZM       | Rohde & Schwarz | 883 720/006 |
| 42 | Meßempfänger                           | ESH 3     | Rohde & Schwarz | 890 174/002 |
| 43 | Meßempfänger                           | ESVP      | Rohde & Schwarz | 891 752/005 |
| 44 | Biconi Ant. 20-300MHz                  | HK 116    | Rohde & Schwarz | 833 162/011 |
| 45 | Logper Ant. 0.3-1 GHz                  | HL 223    | Rohde & Schwarz | 832 914/010 |
| 46 | Amplifier 0.1-4 GHz                    | AFS4      | Miteq Inc.      | 206461      |
| 47 | Logper Ant. 1-18 GHz                   | HL 024 A2 | Rohde & Schwarz | 342 662/002 |
| 48 | Polarisationsnetzwerk                  | HL 024 Z1 | Rohde & Schwarz | 341 570/002 |
| 49 | Double Ridge G Horn Antenne 1-26.5 GHz | 3115      | EMCO            | 9107-3696   |
| 50 | Microw. Sys. Amplifier 0.5- 26.5 GHz   | 8317A     | Hewlett Packard | 3123A00105  |
| 51 | Steuerrechner                          | PSA 17    | Rohde & Schwarz | 883086/026  |
| 52 | Analyzer                               | EZM       | Rohde & Schwarz | 883086/026  |
| 53 | Receiver                               | ESH3      | Rohde & Schwarz | 881515/002  |
| 54 | Relais Matrix                          | PSU       | Rohde & Schwarz | 882943/029  |
| 55 | Art.mains network                      | ESH2Z5    | Rohde & Schwarz | 882394/007  |
| 56 | Art.mains network                      | ESH3Z5    | Rohde & Schwarz | 861189/014  |
| 57 | Art.mains network                      | ESH3Z5    | Rohde & Schwarz | 892475/017  |
| 58 | Art.mains network                      | ESH3Z5    | Rohde & Schwarz | 894981/019  |
| 59 | Art.mains network                      | ESH3Z6    | Rohde & Schwarz | 836501/652  |
| 60 | Art.mains network                      | ESH3Z6    | Rohde & Schwarz | 861406/005  |
| 61 | Art.mains network                      | ESH3Z6    | Rohde & Schwarz | 893689/012  |
| 62 | Art.mains network                      | HFH2Z2    | Rohde & Schwarz | 881058/42   |
| 63 | Power supply                           | 6032A     | Hewlett Packard | 2818A-03449 |
| 64 | Spectrum Analyzer                      | FSIQ 26   | Rohde & Schwarz | 119.6001.27 |
| 65 | Magn. Ant. 9 kHz–30 Mhz                |           |                 |             |
| 66 |                                        |           |                 |             |
| 67 |                                        |           |                 |             |
| 68 |                                        |           |                 |             |
| 69 |                                        |           |                 |             |