SENTON

■ EMV-Prüfzentrum ■ EMI/EMC-Testcenter ■

Straubing, 29 June 2005

# T E S T - R E P O R T

## No. 50531-050145-2

**for**

**Avery 64-05**

**RFID Label Printer**

| | |
|---|---|
| Applicant: | Avery Dennison Deutschland GmbH |
| Purpose of testing: | To show compliance with<br><br>FCC Code of Federal Regulations,<br>Part 15 Subpart C, Section 15.247<br><br>RSS 210, Issue 5, November 2001,<br>Section 6.2.2. (o) |

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Note:
The test data of this report relate only to the individual item which has been tested. This report shall not be reproduced except in full extent without the written approval of the testing laboratory.

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# 1. Administrative Data

| | |
|---|---|
| **Test item (EUT)** | |
| Type designation | Avery 64-05 |
| Serial number(s): | 001 |
| Type of equipment: | RFID Label Printer |
| Parts/accessories: | --- |
| FCC-ID: | |
| **Technical data** | |
| Frequency range | 902 - 928 MHz |
| Operational frequencies | FHSS |
| Statement: | The power was set to the maximum possible |
| Type of modulation | ASK |
| Pulse frequency | N/A |
| Pulse width | N/A |
| Antenna | New Version |
| Power supply | AC 110 V |
| **Applicant:**<br>(full address) | Avery Dennison Deutschland GmbH<br>Ohmstraße 3<br>D-85386 Eching |
| Contract identification: | --- |
| Contact person: | Mr. Markus Biberger (EMV-Testhaus GmbH) |
| Manufacturer: | Avery Dennison Deutschland GmbH |
| **Application details** | |
| Receipt of EUT: | March 17th, 2005 |
| Date of test: | March – May 2005 |
| Note: | --- |
| Responsible for testing: | Martin Steindl |
| Responsible for test report: | Martin Steindl |

## 2. Identification of Test Laboratory

| DETAILS OF THE TEST LABORATORY | |
|---|---|
| COMPANY NAME: | Senton GmbH EMI/EMC Test Center |
| ADDRESS: | Aeussere Fruehlingsstrasse 45<br>D-94315 Straubing<br>Germany |
| LABORATORY ACCREDITATION: | DAR-Registration No. DAT-P-171/94-02 |
| FCC TEST SITE LISTING | 90926 |
| INDUSTRY CANADA TEST SITE REGISTRATION | IC 3050 |
| NAME FOR CONTACT PURPOSES: | Mr. Johann Roidt |
| TELEPHONE: (+49) (0)9421 5522-0 | FAX: (+49) (0)9421 5522-99 |

| PERSONNEL INVOLVED IN THIS TEST REPORT | |
|---|---|
| LABORATORY MANAGER: | ……..<br>Mr. Johann Roidt |
| RESPONSIBLE FOR TESTING: | .....<br>Mr. Martin Steindl |
| RESPONSIBLE FOR TEST REPORT: | Mr. Martin Steindl |

## 3. Summary of Test Results

| SUMMARY OF TEST RESULTS |
| --- |
| The tested sample is in compliance with the requirements set forth in the<br>**Code of Regulations Part 15 Subpart C, Section 15.247**<br>of the Federal Communication Commission (FCC) and the<br>**Radio Standards Specification RSS-210 Issue 5, Sections 6.2.2 (o)**<br>of Industry Canada (IC). |

## 4. Operation Mode of EUT

Transmitter operating continuously,
full tests were performed on lowest, middle and highest RF channel

## 5. Configuration

| Configuration of the EUT |
| --- |
| A full test setup was supplied by the applicant |

| Cables connected to the EUT |
| --- |
| Not Applicable |

| Peripheral devices connected to the EUT |
| --- |
| Not Applicable |

# 6. Measuring Methods

## 6.1. Maximum Transmitter Power

### 6.1.1. Conducted Maximum Transmitter Power

| | |
|---|---|
| Rules and Specifications: | Section 15.247 |
| Guide: | ANSI C63.4-2003 |

| Measurement Procedure: |
|---|
| A spectrum analyzer / EMI test receiver is connected to the output of the transmitter power amplifier (conducted measurement) via dummy load while EUT was operating in transmit mode using the assigned frequency.<br>The trace mode of the spectrum analyzer was set to max hold with:<br>RBW = 100 kHz, VBW = 100 kHz, span = 1 MHz, sweep = 20 ms (auto mode) |

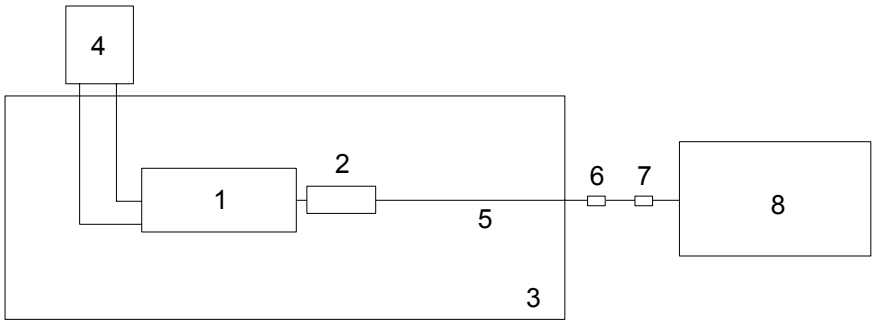



Figure 1: Measurement setup for testing on antenna connector

Test instruments used:

| No. | Type | Model | Serial Number | Manufacturer |
|---|---|---|---|---|
| 01 | Spectrum Analyzer | FSP 30 | 100063 | Rohde & Schwarz |
| 08 | Power Meter | NRVS | 836856/015 | Rohde & Schwarz |
| 09 | Power Sensor | NRV-Z52 | 837901/030 | Rohde & Schwarz |
| 18 | Attenuator 20 dB | 4776-20 | 9503 | Narda |
| 19 | Attenuator 10 dB | 4776-10 | 9412 | Narda |

### 6.1.2. Radiated Maximum Transmitter Power

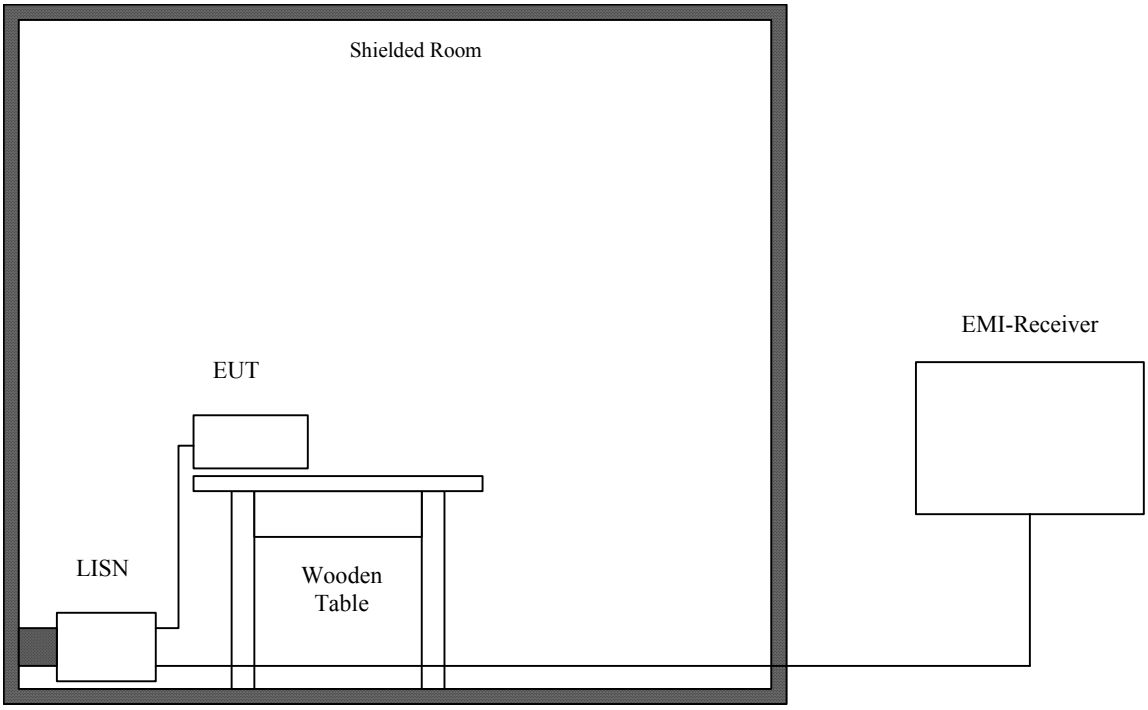
Radiated Maximum Transmitter Power was measured with detector-function of the spectrum analyzer set to positive peak and trace mode max hold:
RBW = 100 kHz, VBW = 100 kHz, span = 1 MHz, sweep = 15 s

For measurement setup and procedure see section 5.2

## 6.2. Conducted powerline emissions

| | |
|---|---|
| Rules and Specifications: | Sections 15.107 & 15.207 |
| Guide: | CISPR 22 |

| Measurement Procedure: |
|---|
| In general conducted emission tests in the frequency range 0.15 - 30 MHz are required to be performed with quasi-peak and average detector. To simplify testing the following procedure is used:<br>First the whole spectrum of emission caused by equipment under test (EUT) is recorded with detector set to peak. After that all emission levels having less margin than 20 dB to or exceeding the appropriate limit (in general average limit is 10 dB lower than quasi-peak limit) are retested with detector set to quasi-peak. If average limit is kept no additional scan with average detector is necessary. In cases of emission levels between quasi-peak and average limit an additional scan with detector set to average has to be recorded. |




Test instruments used:

| No. | Type | Model | Serial Number | Manufacturer |
|---|---|---|---|---|
| 01 | EMI Receiver | ESHS 10 | 860043/016 | Rohde & Schwarz |
| 02 | LISN | ESH3-Z5 | 862770/021 | Rohde & Schwarz |
| 03 | LISN | ESH-3-Z5 | 830952/025 | Rohde & Schwarz |
| 04 | Shielded Room No. 4 | --- | 3FD-100 544 | Euroshield |

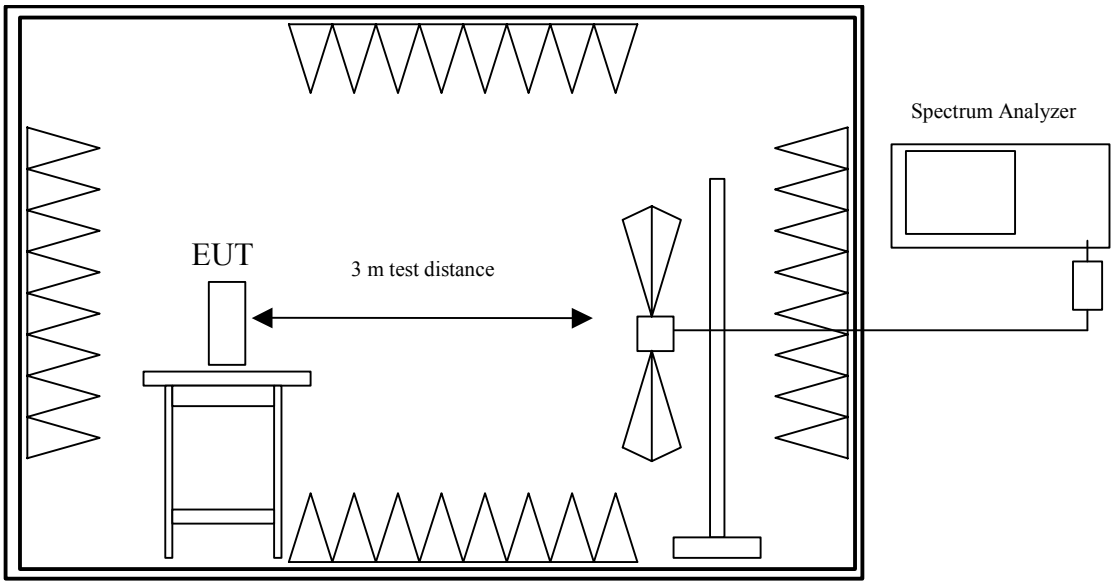
## 6.3. Radiated Emissions 30 MHz – 1 GHz

| | |
|---|---|
| Rules and Specifications: | Section 15.247 |
| Guide: | ANSI C63.4-2003 |

Measurement Procedure:

Radiated emissions are measured over the frequency range from 30 MHz to 1 GHz.

Measurements were made in both the horizontal and vertical planes of polarization in a fully anechoic room using a spectrum analyzer with the detector function set to peak and resolution bandwidth set to 100 kHz. All tests were performed at a test-distance of 3 meters. Hand-held or body-worn devices are rotated through three orthogonal axes to determine which attitude and configuration produces the highest emission relative to the limit and therefore shall be used for final testing




Fully anechoic chamber

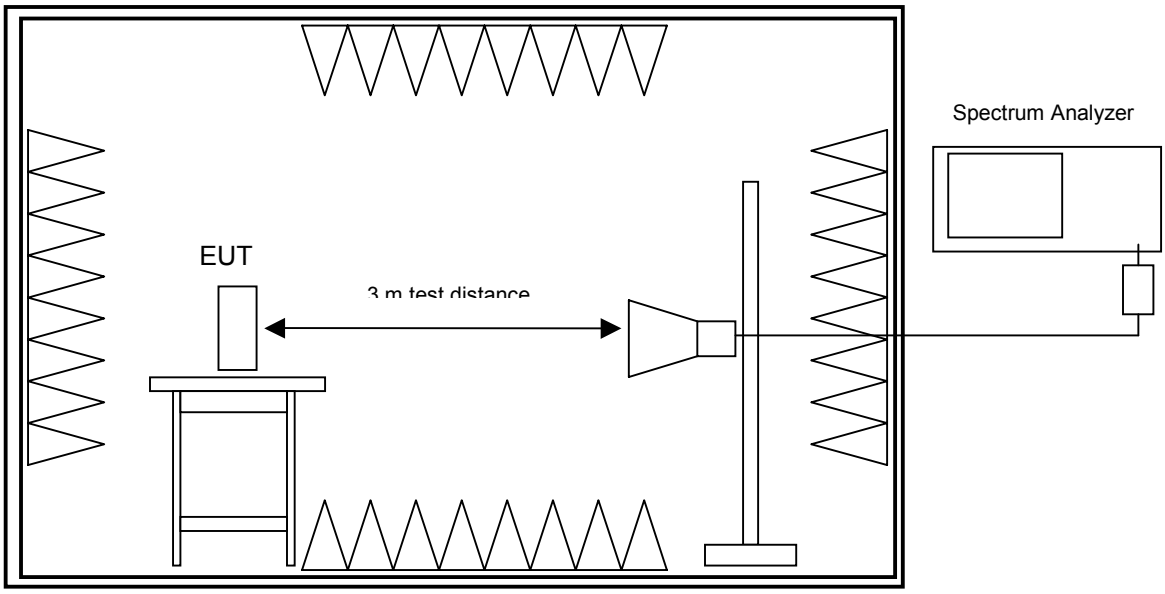
Test instruments used:

| No. | Type | Model | Serial Number | Manufacturer |
|---|---|---|---|---|
| 01 | Spectrum Analyzer | FSP 30 | 100063 | Rohde & Schwarz |
| 113 | Preamplifier | CPA9231A | 3393 | Schaffner |
| 141 | Trilog broadband antenna | VULB 9163 | 9163-188 | Schwarzbeck |
| 003 | Fully anechoic room | No. 2 | 1452 | Albatross Projects |

## 6.4. Radiated Emission > 1 GHz

| | |
|---|---|
| Rules and Specifications: | Section 15.247 |
| Guide: | ANSI C63.4-2003 |

| Measurement Procedure: |
|---|
| Radiated emissions are measured in the frequency range 1 GHz to 25 GHz. Resolution and video bandwidth of the spectrum analyzer are set to 1 MHz. Hand-held or body-worn devices are rotated through three orthogonal axes to determine which attitude and configuration produces the highest emission relative to the limit and therefore shall be used for final testing. Additional measurements are performed at critical frequencies with reduced span.<br>EUT is rotated all around and receiving antenna is raised and lowered to find the maximum levels of emission. The cables and equipment are placed and moved within the range of position likely to find their maximum emissions.<br>All tests are performed in a fully-anechoic chamber with a test-distance of 3 meters.<br>If required preamplifiers are used for the whole frequency range. Special care is taken to avoid overload in transmit mode (using appropriate attenuators and filters if necessary). |



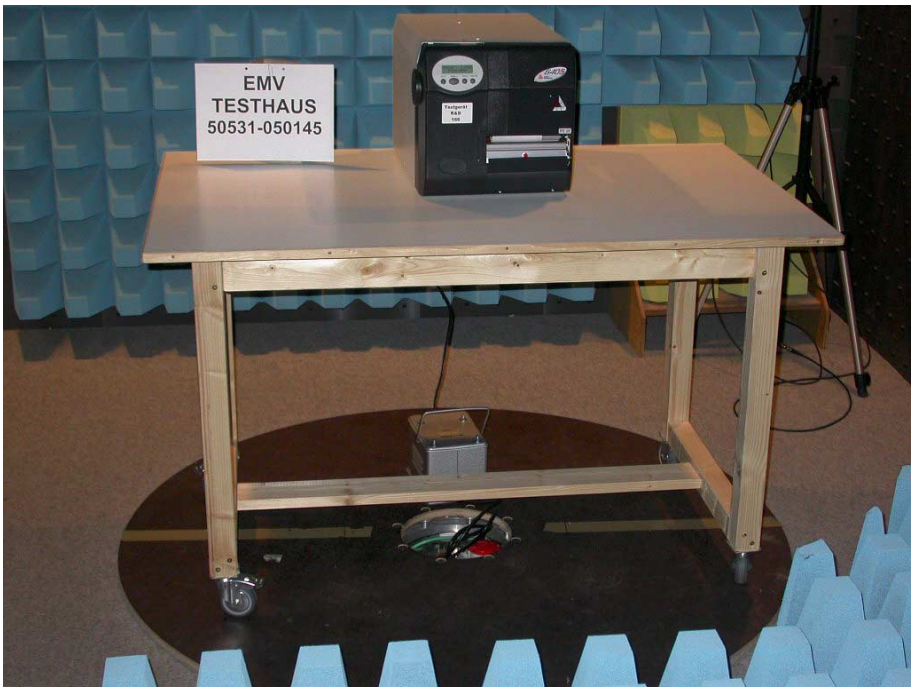

Fully anechoic chamber

Test instruments used:

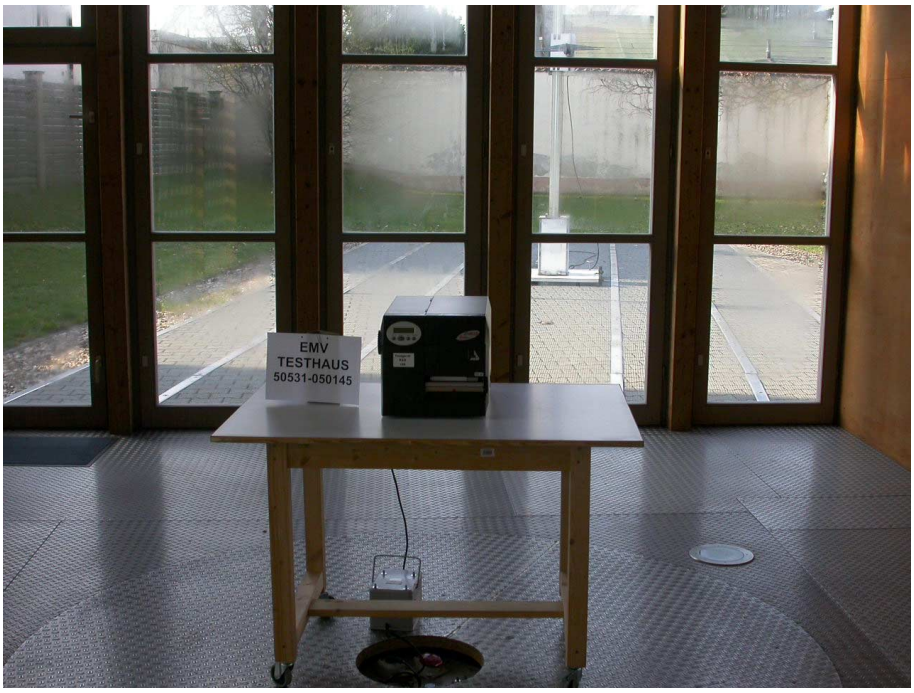
| No. | Type | Model | Serial Number | Manufacturer |
|---|---|---|---|---|
| 01 | Spectrum Analyzer | FSP 30 | 100063 | Rohde & Schwarz |
| 143 | Log. periodic antenna | 3147 | 9112-1054 | EMCO |
| 145 | Horn antenna | 3115 | 9508-4553 | EMCO |
| 146 | Horn antenna set | 3160-03/-09 | 9112-1003 | EMCO |
| 114 | Preamplifier 1-8 GHz | AFS3-00100800-32-LN | 847743 | Miteq |
| 115 | Preamplifier 8-18 GHz | ACO/180-3530 | 32641 | CTT |
| 003 | Fully anechoic room | No. 2 | 1452 | Albatross Projects |

# 7. Photographs Taken During Testing

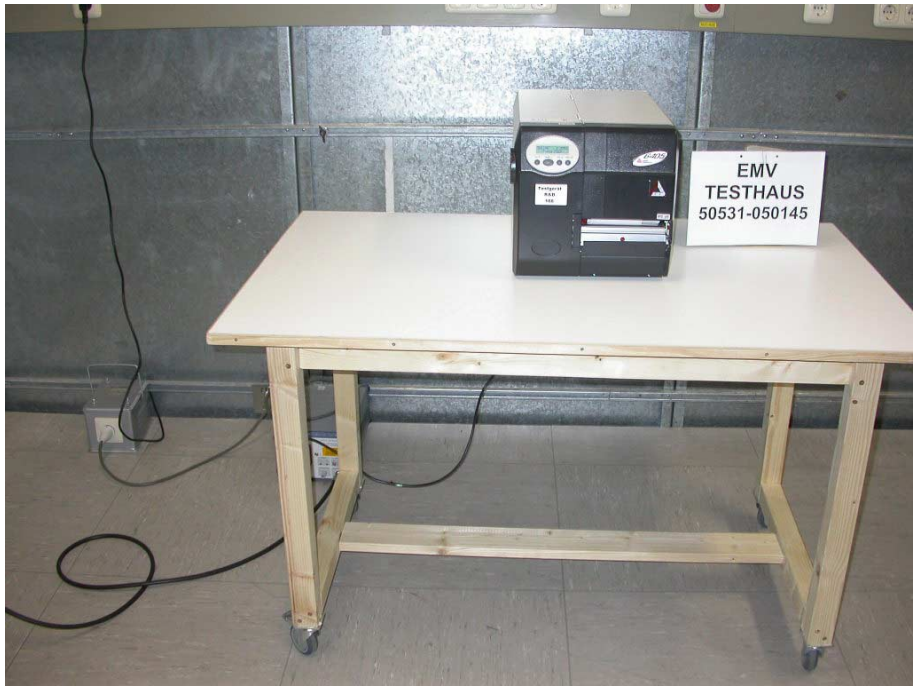
**Test setup for radiated emission measurement 30 MHz – 10 GHz (fully anechoic room)**



**Test setup for radiated emission measurement 30 MHz – 1 GHz (open field test side)**



## Test setup for conducted AC Powerline Emission Mesurement



## 8. List of Measurements

| FCC Part 15 Subpart C | | | |
|---|---|---|---|
| **Section(s):** | **Test** | **Page(s)** | **Result** |
| | | | |
| | **Transmitter:** | | |
| | | | |
| **15.205** | Restricted Bands | --- | Not Applicable |
| **15.247 (a) (1)** | Channel Bandwidth | 19 | Passed |
| **15.247 (a) (1)** | Hopping channel separation | 23 | Passed |
| **15.247 (a) (1) (i)** | Number of Hopping Frequencies used | 27 | Passed |
| **15.247 (a) (1) (i)** | Dwell Time of each frequency within a 10 Second Period of Time | 28 | Passed |
| **15.247 (b) (2)** | Maximum Peak Output Power | 35 | Passed |
| **15.247 (d)** | Spurious emissions - conducted | 39 | Passed |
| **15.109** | Radiated Emissions | 46 | Passed |
| **15.247 (d)**<br>**15.209** | Spurious emissions - radiated | 47 | Passed |
| **15.247 (g)** | Compliance with applicable requirements for FHSS | --- | |
| **15.247 (h)** | Limitation on avoidance on hopping in occupied channel | --- | |
| **15.203** | Antenna Requirement | 51 | Passed |
| **2.1093** | RF Exposure Requirement | 53 | Passed |
| **15.107 (b)** | Conducted AC Powerline Emissions Class A | 54 | Passed |
| | | | |

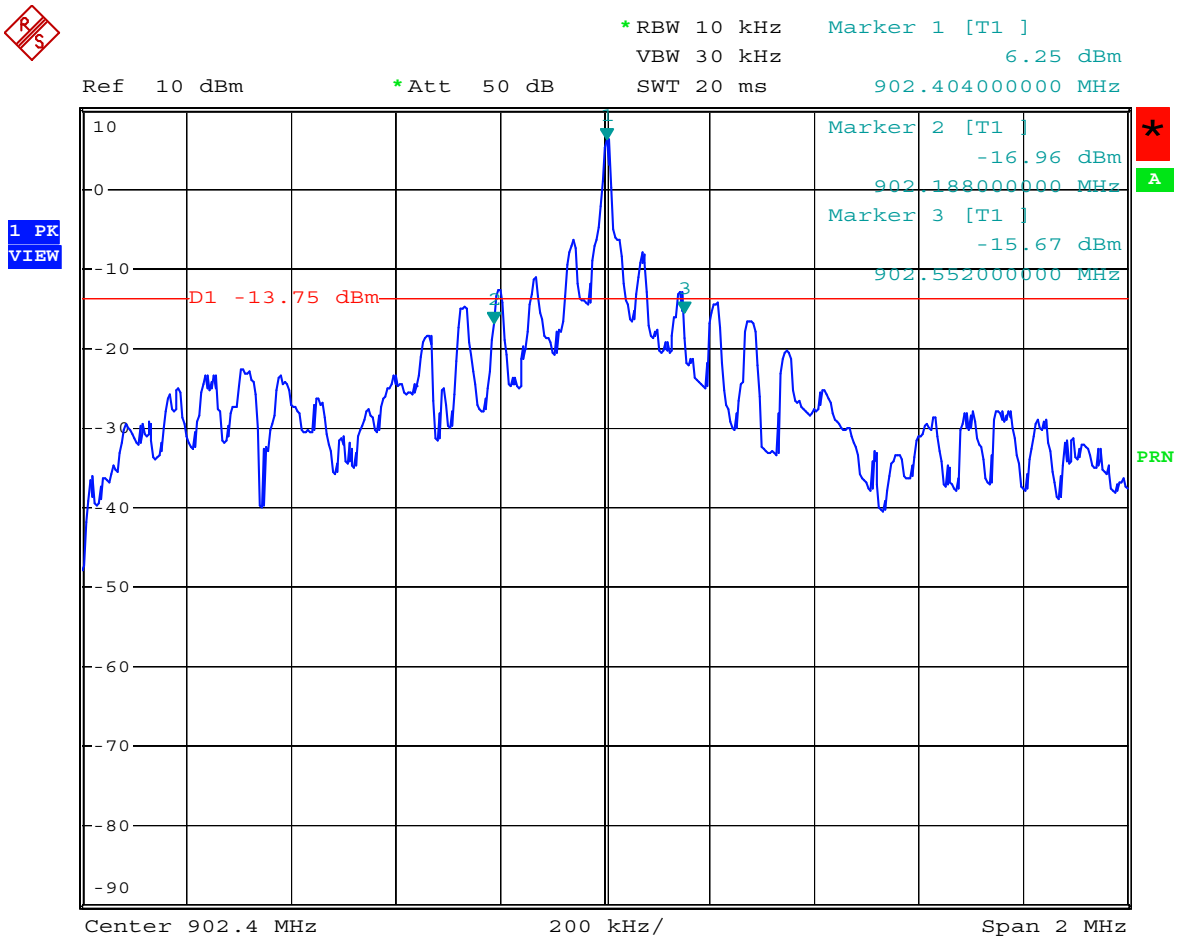
| RSS 210, Issue 5 | | | |
|---|---|---|---|
| **Section(s):** | **Test** | **Page(s)** | **Result** |
| | | | |
| | **Transmitter:** | | |
| **6.2.2 (o)** | | | |
| **(e3)** | Restricted Bands | --- | Not Applicable |
| **(a) (a2)** | Channel Bandwidth | 19 | Passed |
| **(a2)** | Hopping channel separation | 23 | Passed |
| **(a2)** | Number of Hopping Frequencies used | 27 | Passed |
| **(a2)** | Dwell Time of each frequency within a 10 Second Period of Time | 28 | Passed |
| **(a2)** | Maximum Peak Output Power | 35 | Passed |
| **(e1)** | Spurious emissions - conducted | 39 | Passed |
| **(e1)** | Spurious emissions - radiated | 47 | Passed |
| **(e2)** | Antenna Requirement | 51 | Passed |
| **5.4** | Radiated Emissions | 46 | Passed |
| **14** | RF Exposure Requirement | 53 | Passed |
| **6.6** | Conducted AC Powerline Emissions | 54 | Passed |
| | | | |

## Channel Bandwidth

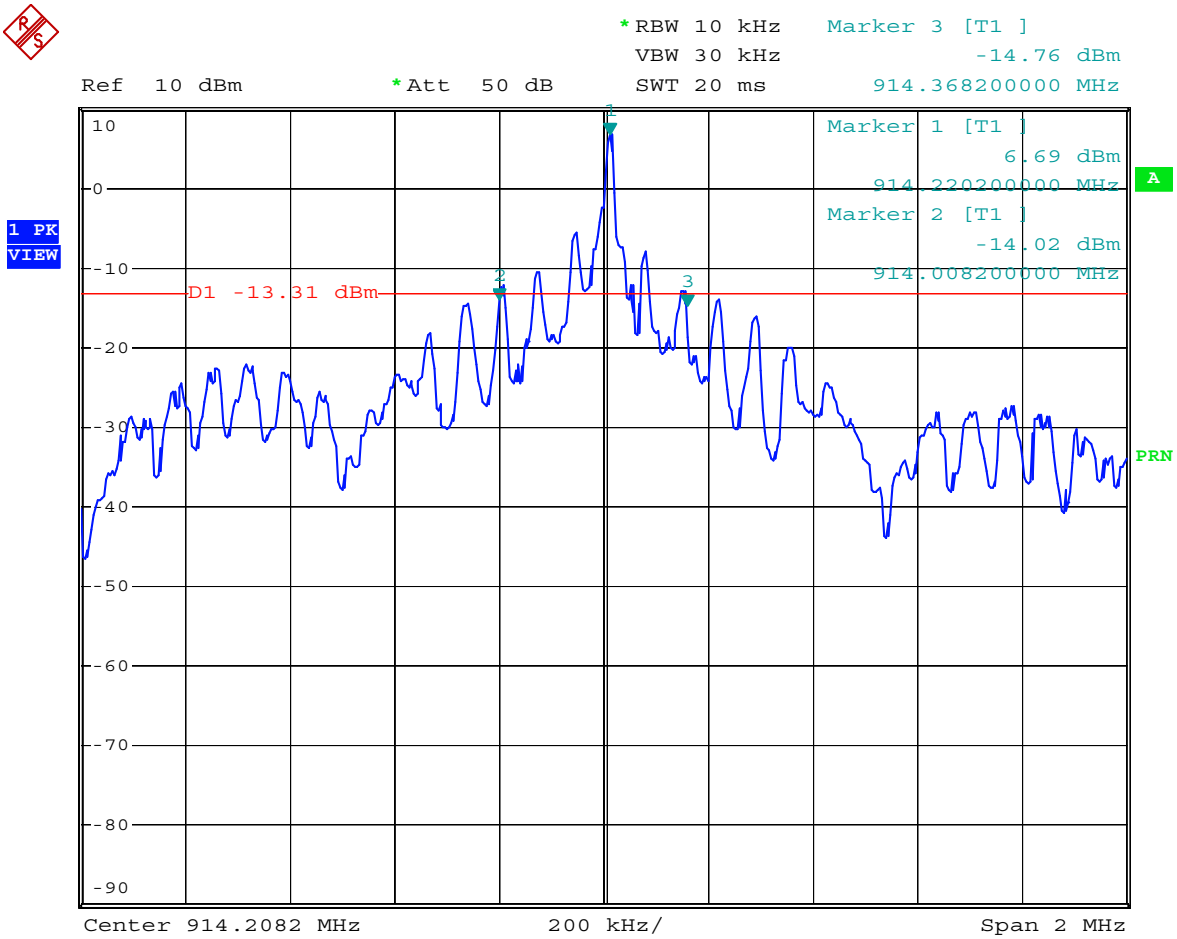
| | |
|---|---|
| Rules and Specifications: | 15.247 (a) (1) (i) |
| Guide: | ANSI C63.4-2003 |
| Limit: | The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz. |

| | |
|---|---|
| Test Site: | Radio Lab. |
| Distance: | Conducted Measurement |
| Date of Test: | June 21st, 2005 |

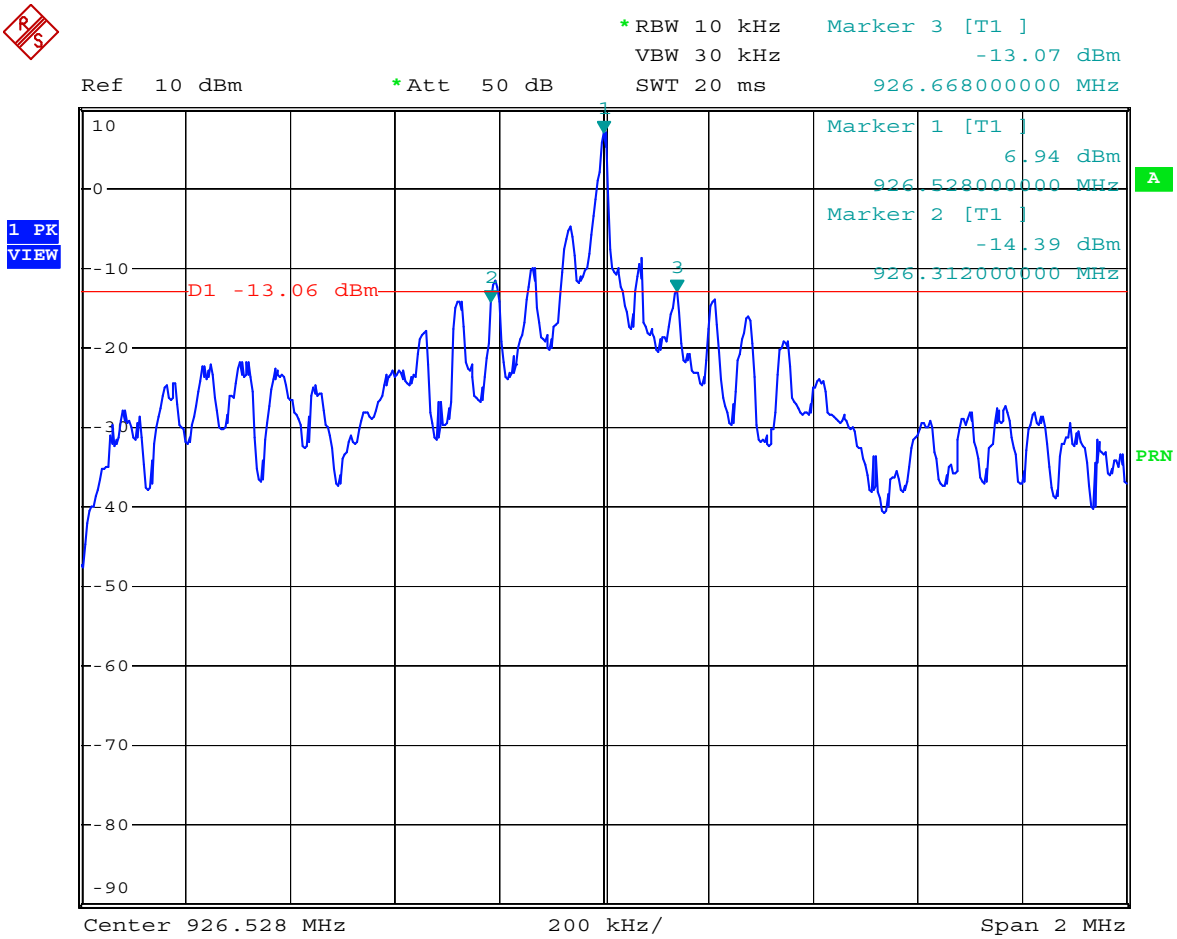
| Frequency | Channel Bandwidth in kHz | Standard | Result |
|---|---|---|---|
| Low (902.74 MHz) | 364.0 | ≤500 kHz | **Passed** |
| Middle 915,37 MHz | 360.0 | ≤500 kHz | **Passed** |
| High 926.43 MHz | 356.0 | ≤500 kHz | **Passed** |




Comment: EMV050145 Channel Bandwidth
Date: 21.JUN.2005 20:30:25




Comment: EMV050145 Channel Bandwidth
Date: 21.JUN.2005 20:35:33



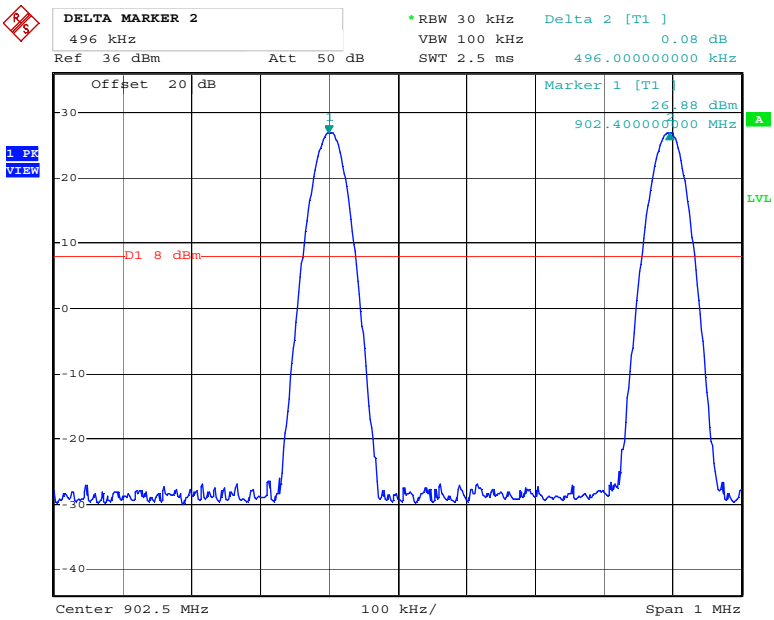

Comment: EMV050145 Channel Bandwidth
Date: 21.JUN.2005 20:38:47

## Hopping Channel Separation

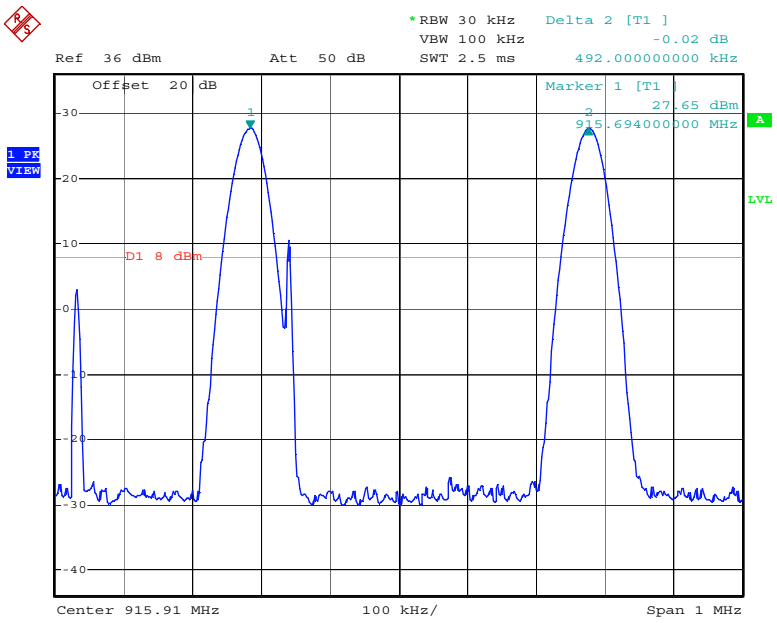
| | |
|---|---|
| Rules and Specifications: | 15.247 (a) (1) |
| Guide: | ANSI C63.4-2003 |
| Limit: | Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth, whichever is greater. |

| | |
|---|---|
| Test Site: | Radio Lab. |
| Distance: | Conducted Measurement |
| Date of Test: | April 8th, 2005 |

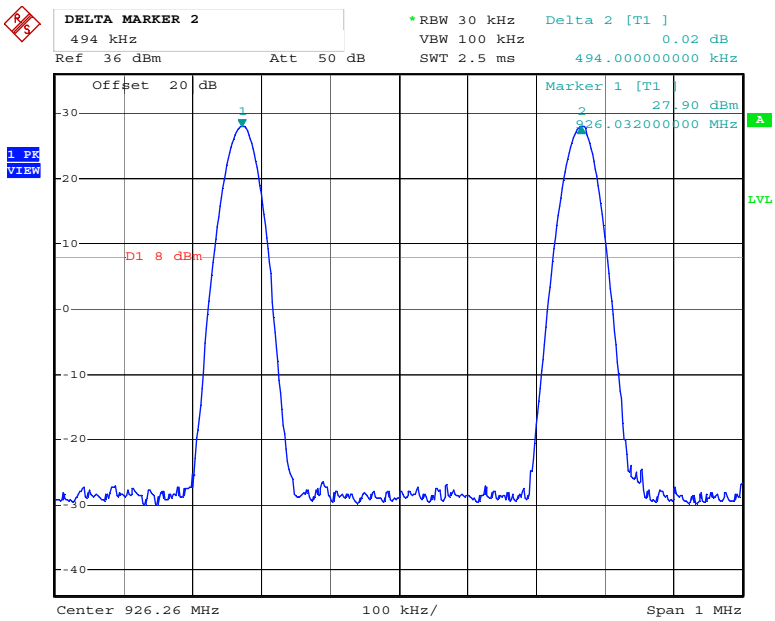
| Channel Frequency | Measured | Required | Result |
|---|---|---|---|
| 902.2. MHz | 496 kHz | > 360 kHz | **Passed** |
| 915.4 MHz | 492 kHz | > 292 kHz | **Passed** |
| 925.9 MHz | 494 kHz | > 356 kHz | **Passed** |




Comment: EMV050145 Hopping Frequency Separation
Date: 8.APR.2005 13:13:15




Comment: EMV050145 Hopping Frequency Separation
Date: 8.APR.2005 13:11:16



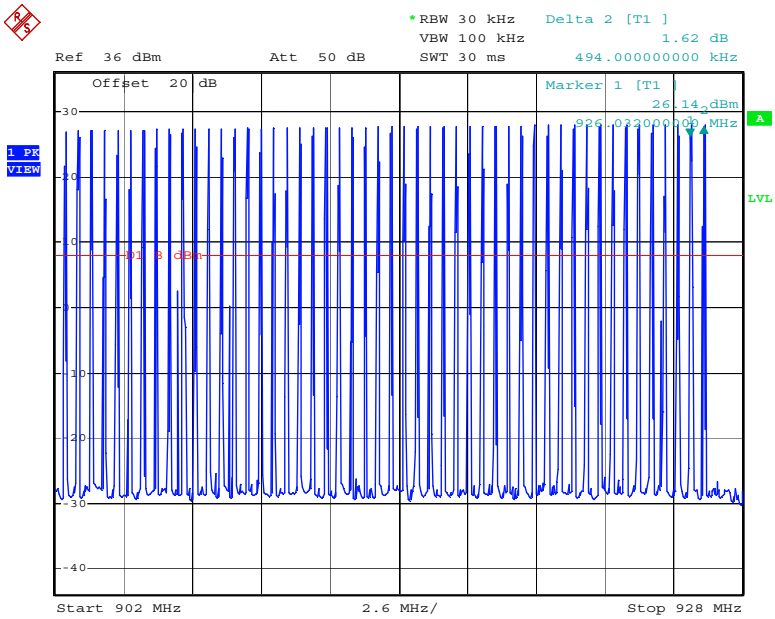

Comment: EMV050145 Hopping Frequency Separation
Date: 8.APR.2005 13:15:27

## Number of Hopping Frequencies used

| | |
|---|---|
| Rules and Specifications: | 15.247 (a) (1) (i) |
| Guide: | ANSI C63.4-2003 |
| Limit: | Frequency hopping systems in the 902 - 928 MHz band shall use at least 25 non-overlapping channels. |

| | |
|---|---|
| Test Site: | Radio Lab. |
| Distance: | Conducted Measurement |
| Date of Test: | April 8th, 2005 |

| Number of Hopping Frequencies | Measured | Required | Result |
|---|---|---|---|
| High Channel Set + Low Channel Set | 50 | 25 | **Passed** |



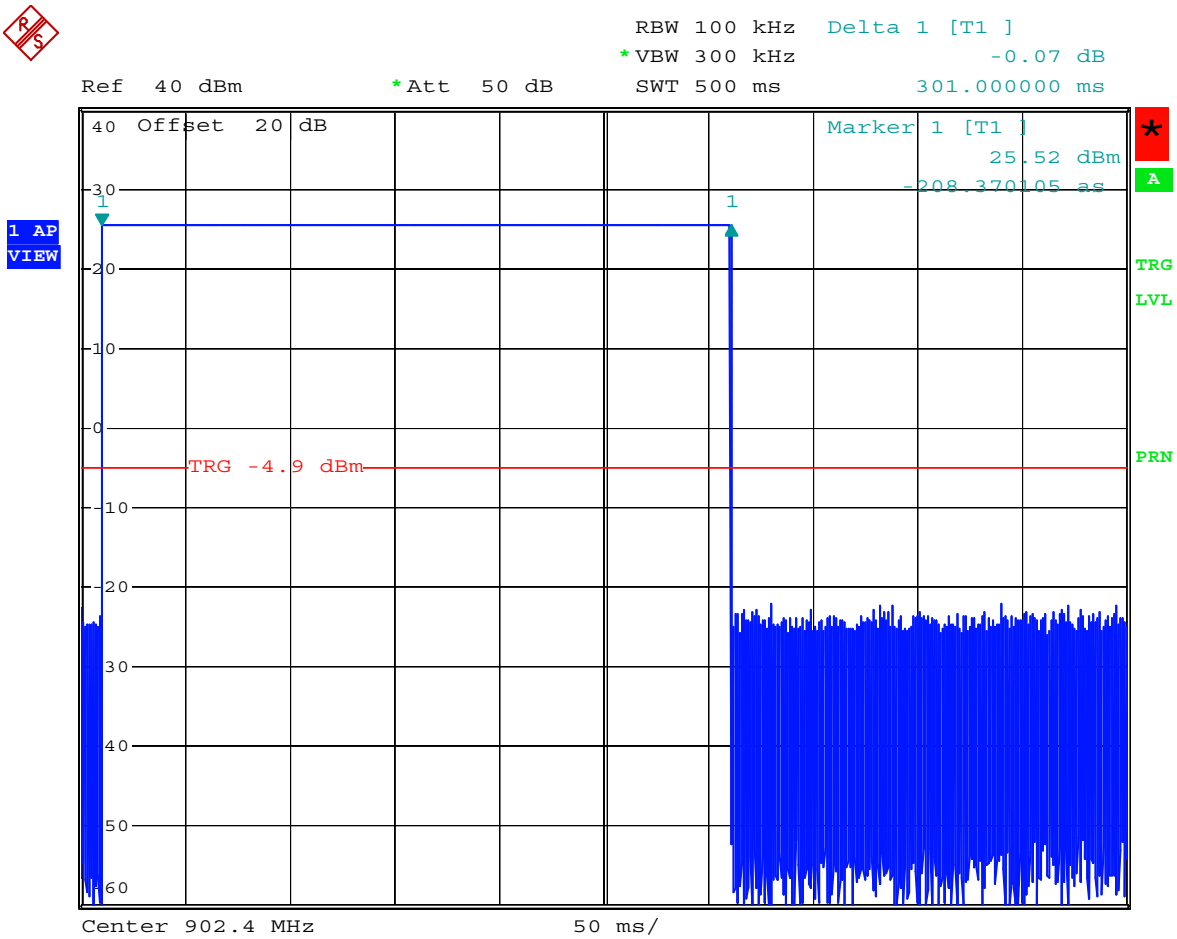

Comment: EMV050145 Number of Hopping Frequencies
Date: 8.APR.2005 13:18:22

## Time Occupancy on any Channel

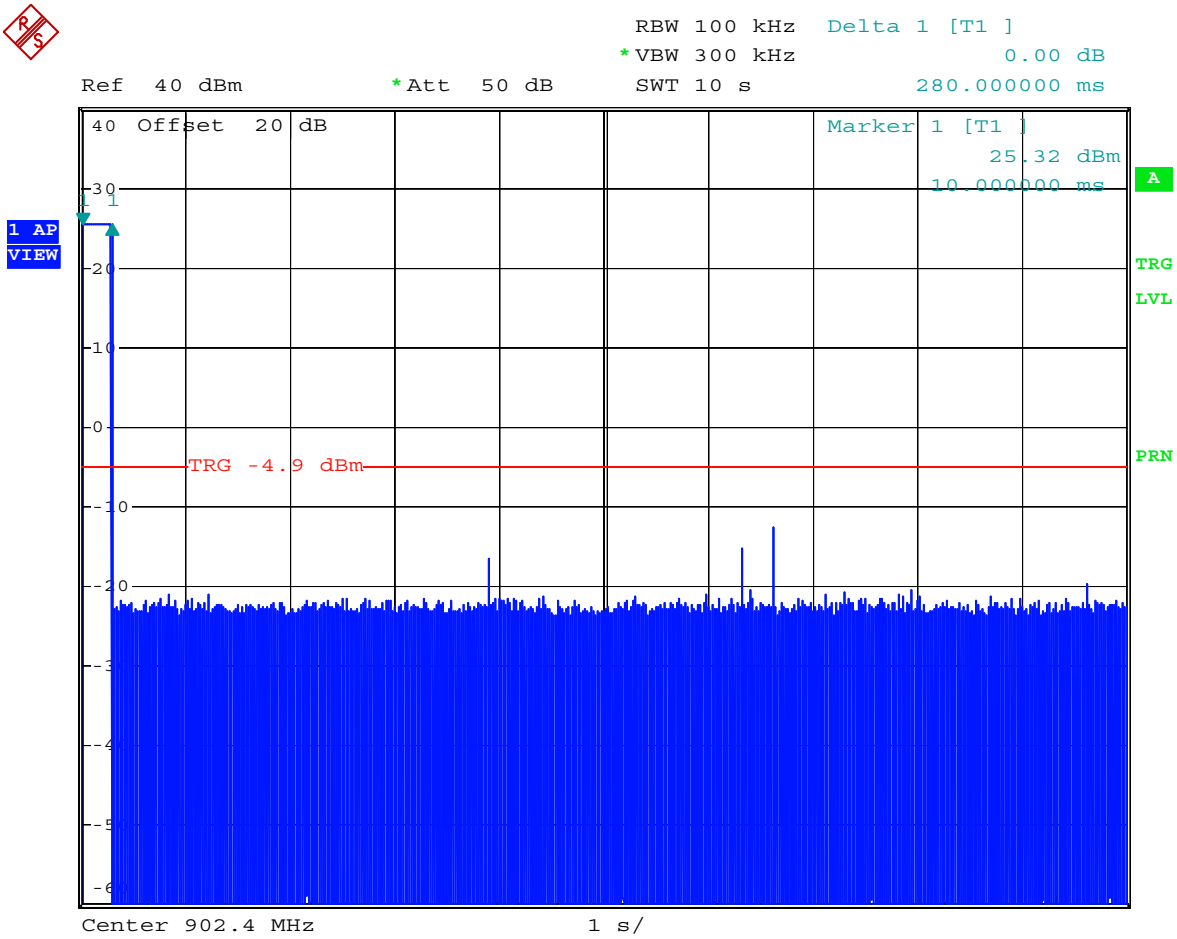
| | |
|---|---|
| Rules and Specifications: | 15.247 (a) (1) (i) |
| Guide: | ANSI C63.4-2003 |
| Limit: | If the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. |

| | |
|---|---|
| Test Site: | Radio Lab. |
| Distance: | Conducted Measurement |
| Date of Test: | 21st June , 2005 |

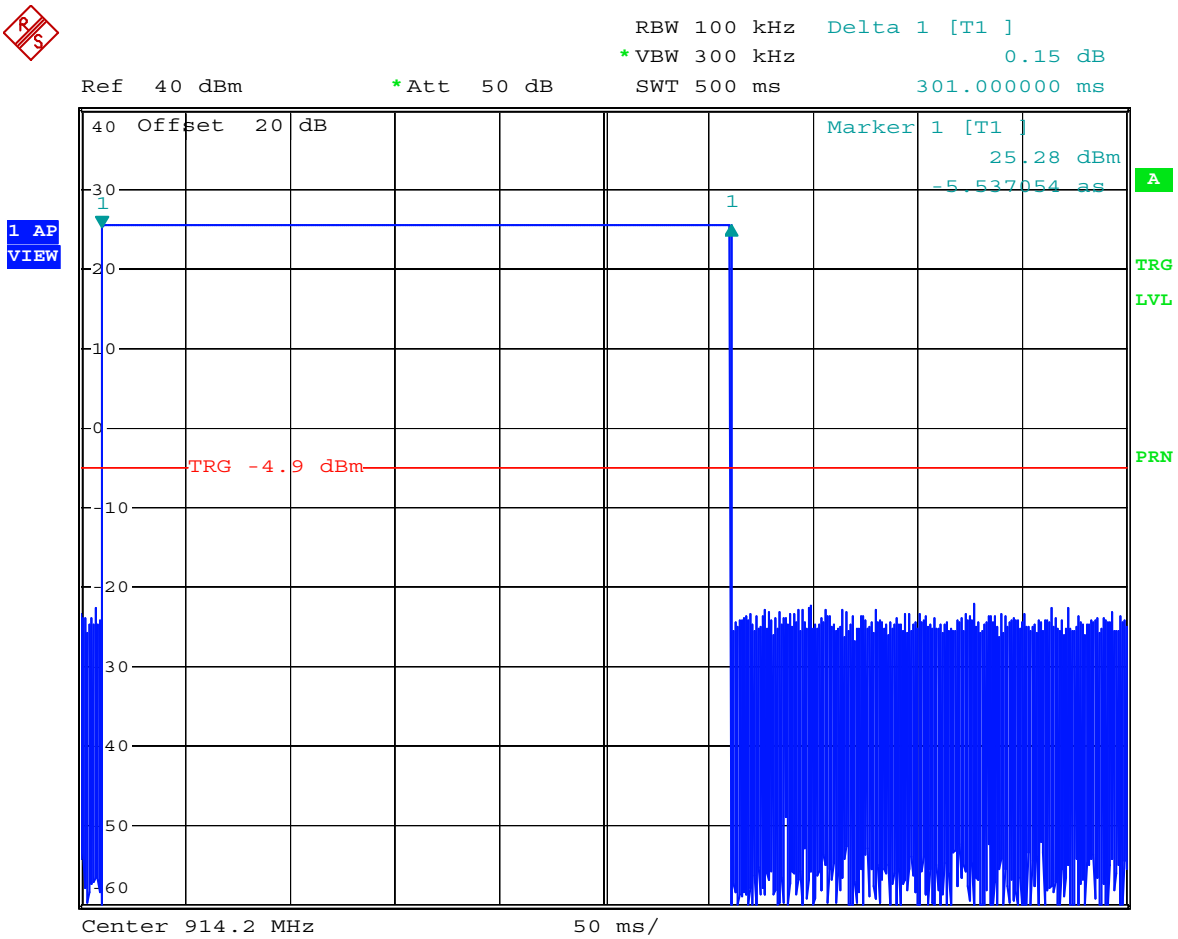
| Time occupancy | Measured | Required | Result |
|---|---|---|---|
| | 1 x 301 ms = 301 ms within a 10 seconds period | < 0.4 seconds within a 10 second period | **Passed** |



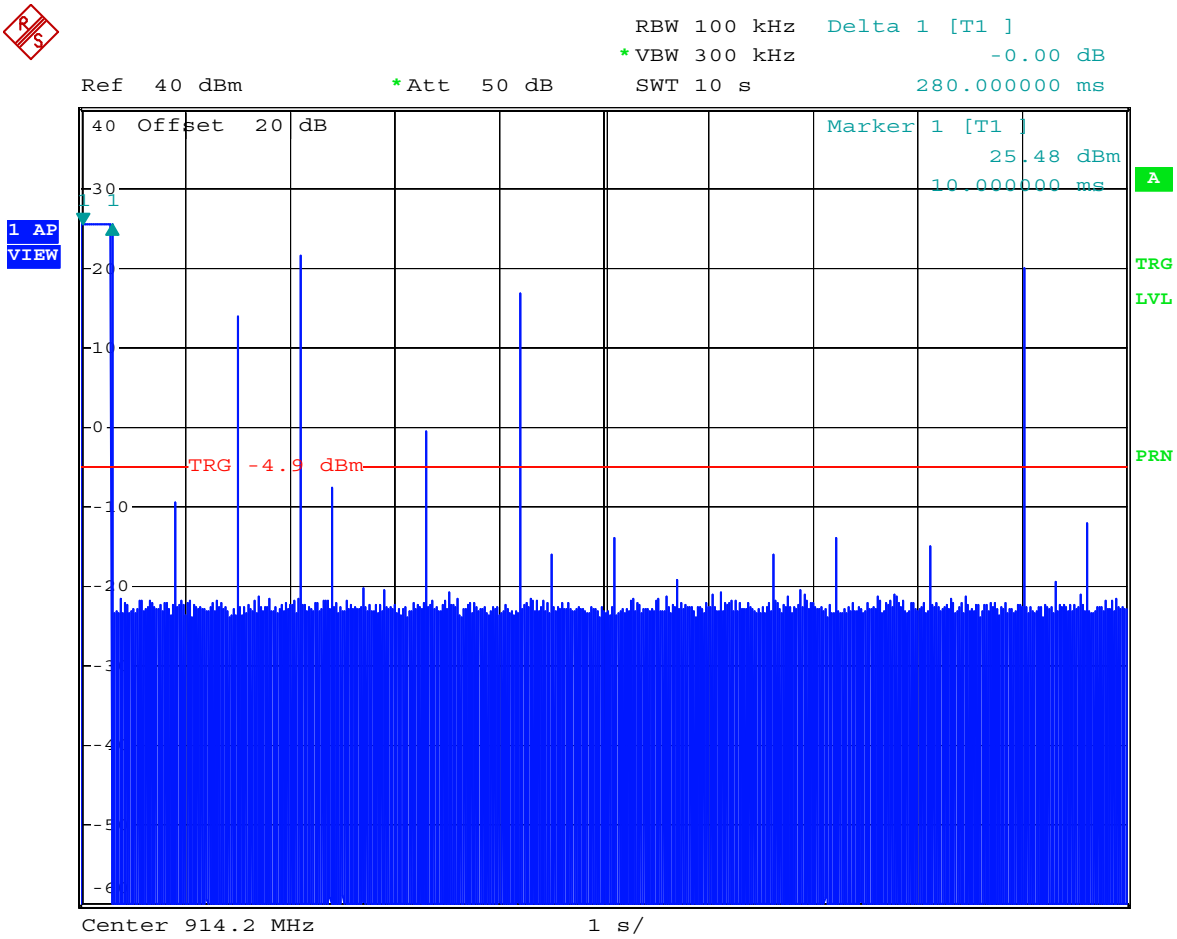

Comment: EMV050145 Time of Occupancy on any Channel
Date: 21.JUN.2005 21:00:35



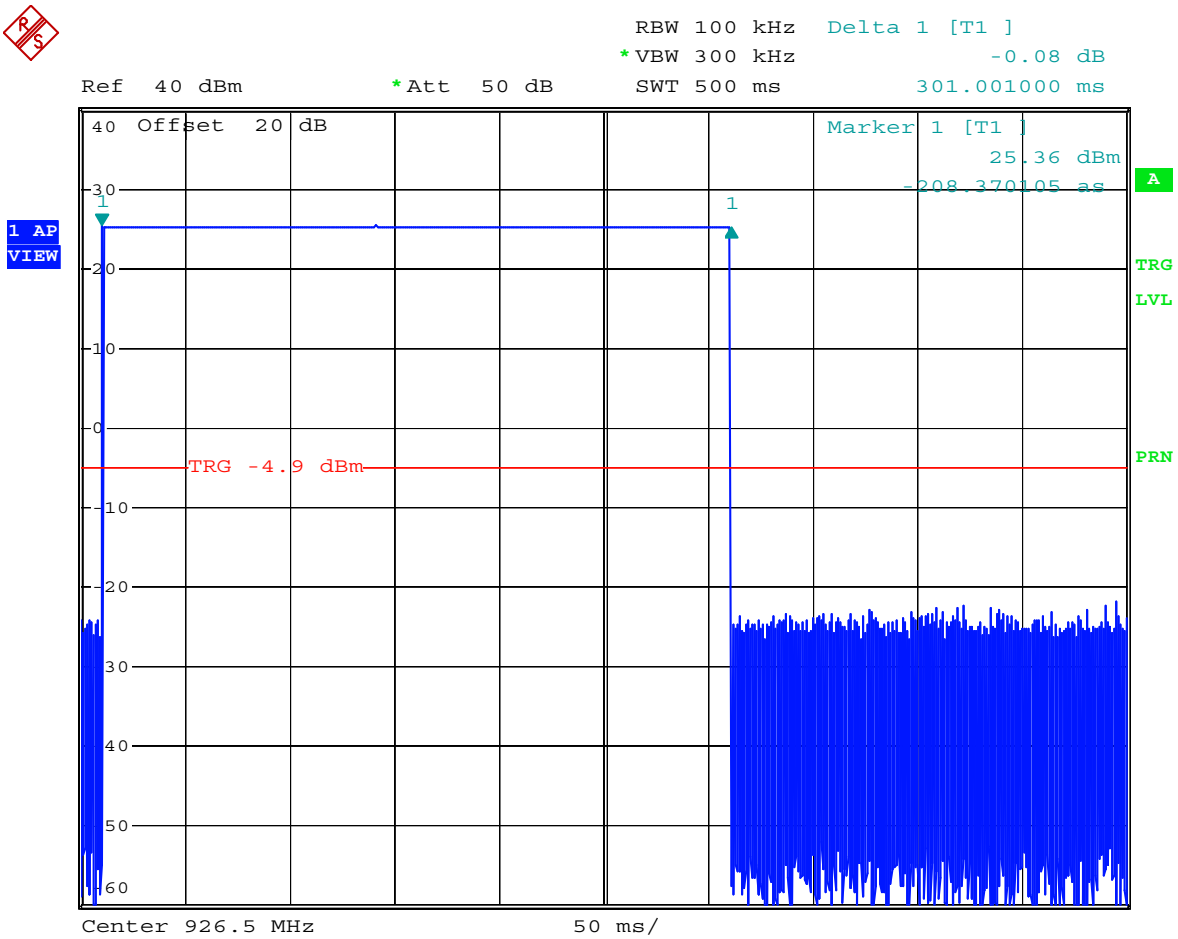

Comment: EMV050145 Time of Occupancy on any Channel
Date: 21.JUN.2005 21:01:33



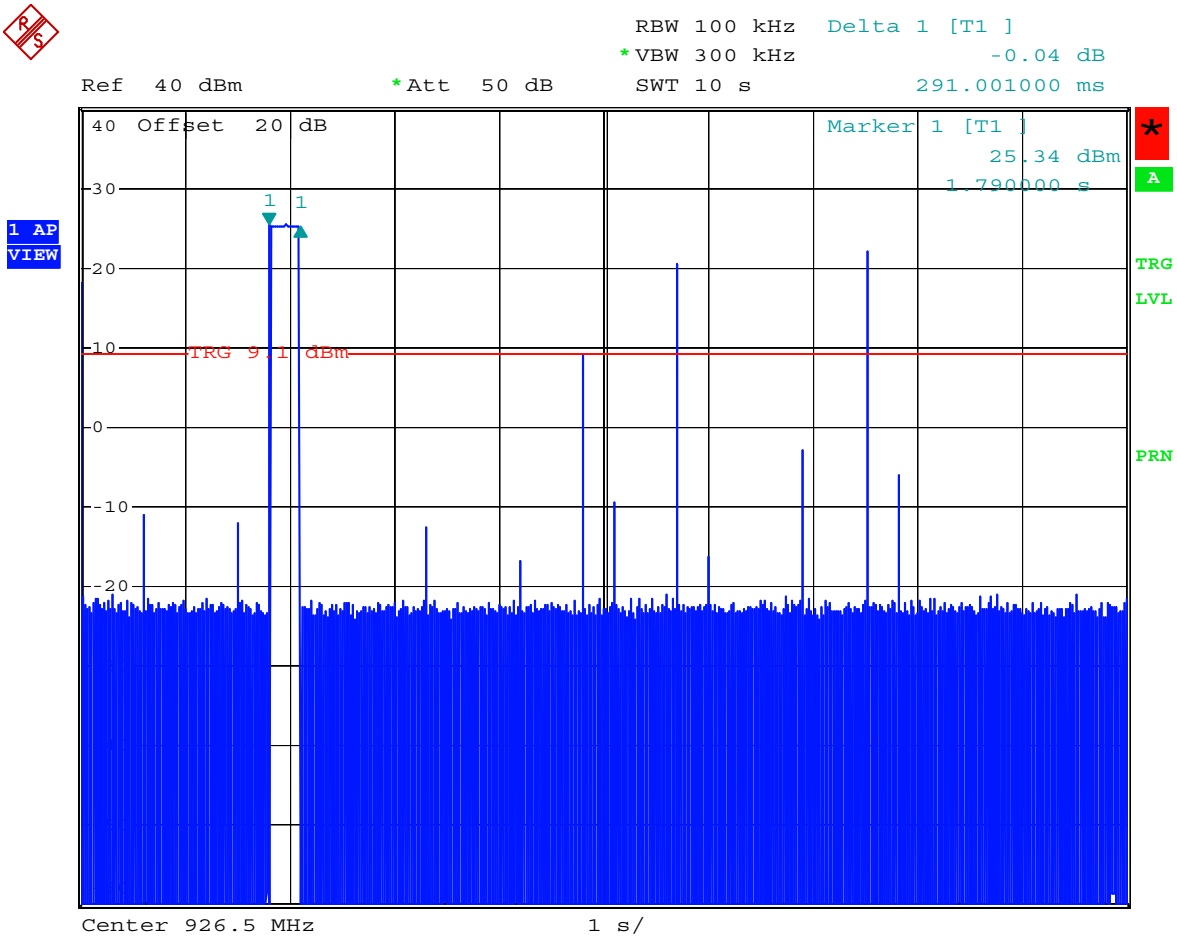

Comment: EMV050145 Time of Occupancy on any Channel
Date: 21.JUN.2005 21:03:39




Comment: EMV050145 Time of Occupancy on any Channel
Date: 21.JUN.2005 21:02:40




Comment: EMV050145 Time of Occupancy on any Channel
Date: 21.JUN.2005 21:07:36



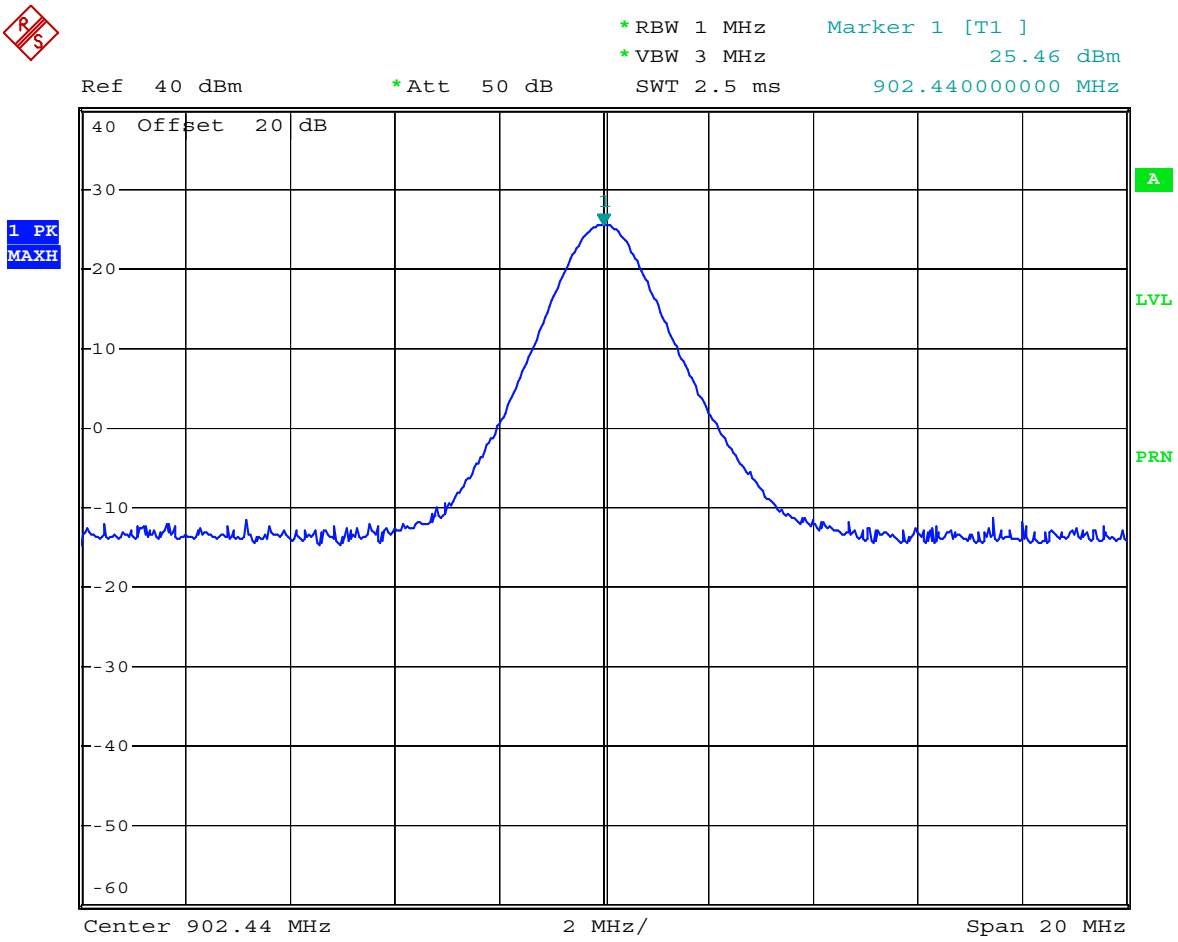

Comment: EMV050145 Time of Occupancy on any Channel
Date: 21.JUN.2005 21:08:38

## Carrier Power Measurement

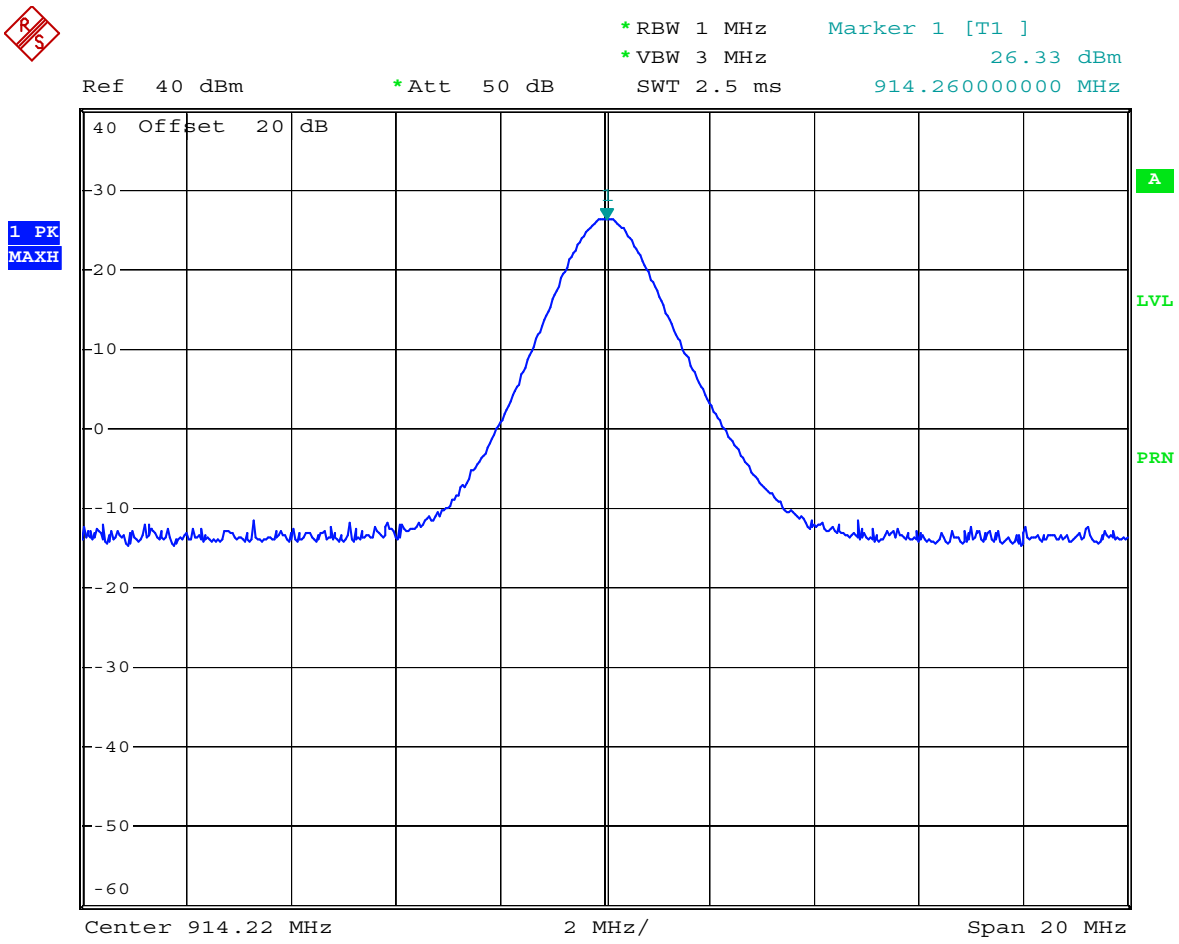
| | |
|---|---|
| Rules and Specifications: | 15.247 (b) (2) |
| Guide: | ANSI C63.4-2003 |
| Limit: | 1.0 watts for systems employing at least 50 hopping channels; and 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels |

| | |
|---|---|
| Test Site: | Radio Lab. |
| Distance: | Conducted Measurement |
| Date of Test: | June 21st, 2005 |

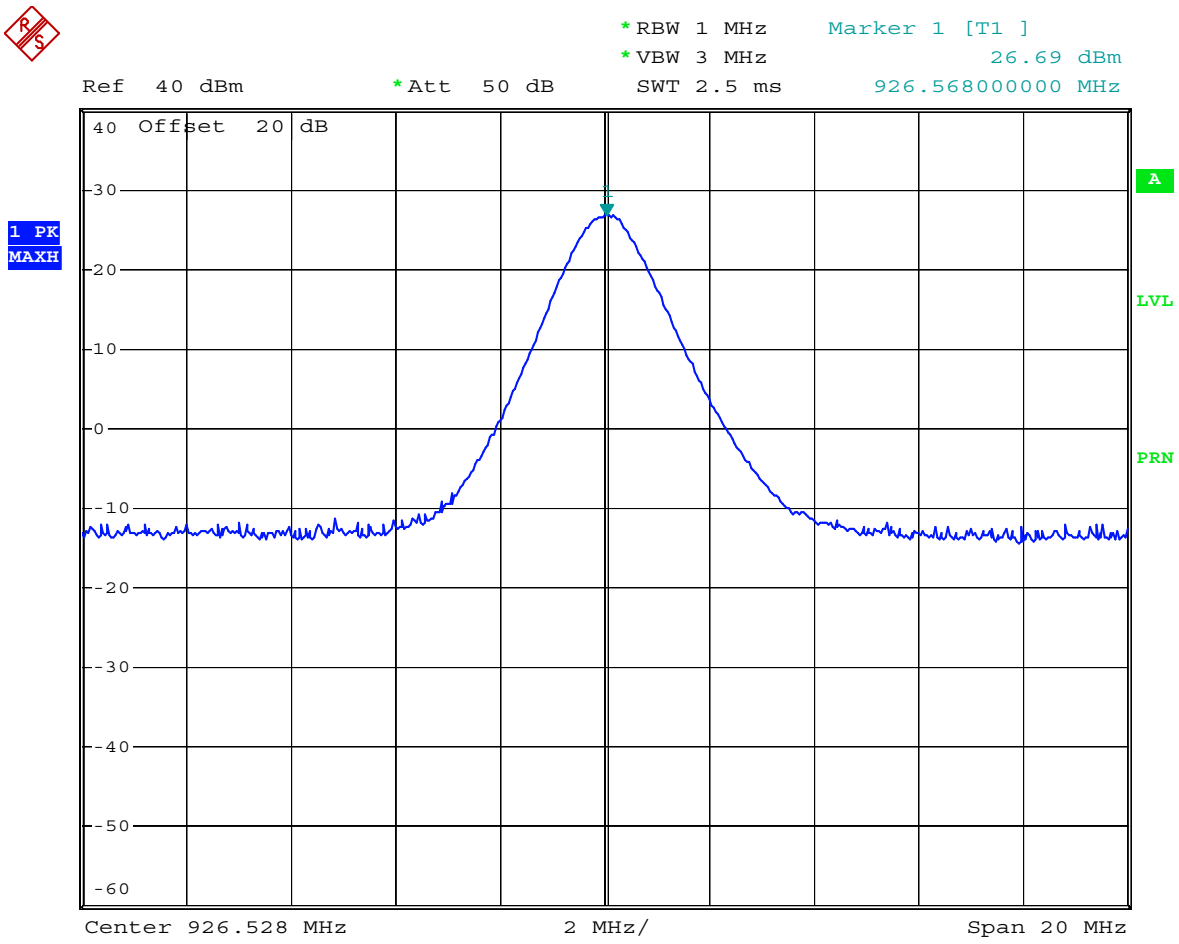
| Frequency | Output Power in dBm | Output Power | Standard | Result |
|---|---|---|---|---|
| Low (902.4 MHz) | 25.46 | 351.6 mW | ≤1.0 W | **Passed** |
| Middle 914.7 MHz | 26.33 | 429.5 mW | ≤1.0 W | **Passed** |
| High 926.5 MHz | 26.69 | 466.7 mW | ≤1.0 W | **Passed** |




Comment: EMV050145 Charrier Power (maximum)
Date: 21.JUN.2005 20:48:00




Comment: EMV050145 Charrier Power (maximum)
Date: 21.JUN.2005 20:47:10




Comment: EMV050145 Charrier Power (maximum)
Date: 21.JUN.2005 20:43:23

## Spurious Emissions - Conducted

| | |
|---|---|
| Rules and Specifications: | 15.247 (d) |
| Guide: | ANSI C63.4-2003 |
| Limit: | In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. |

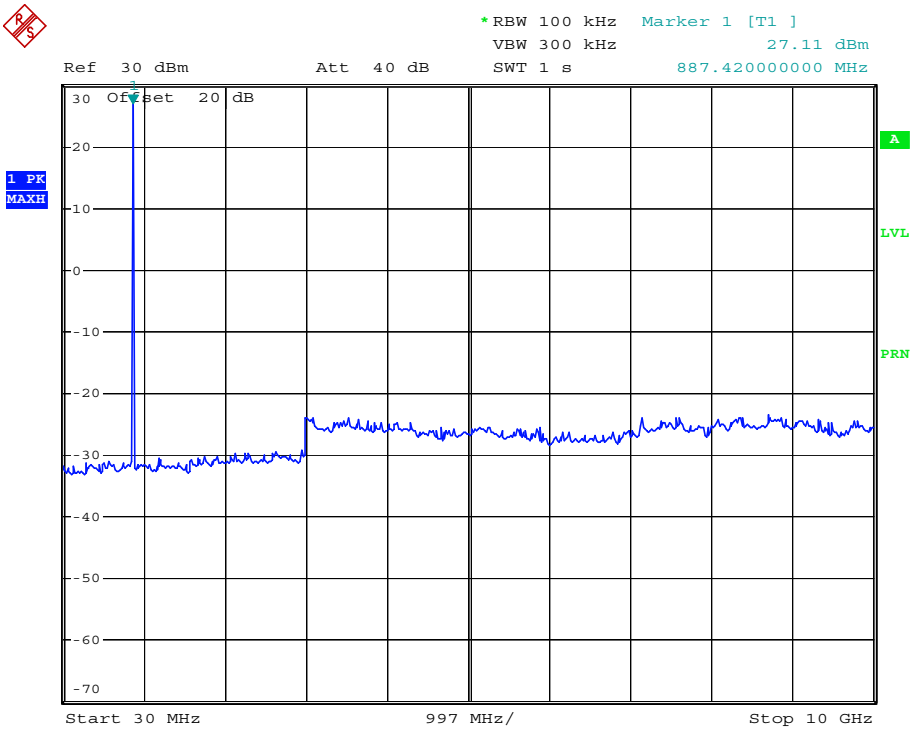
| | |
|---|---|
| Test Site: | Radio Lab. |
| Distance: | Conducted Measurement |
| Date of Test: | April 11th, 2005 |

| | |
|---|---|
| **Test Result:** | **Passed** |

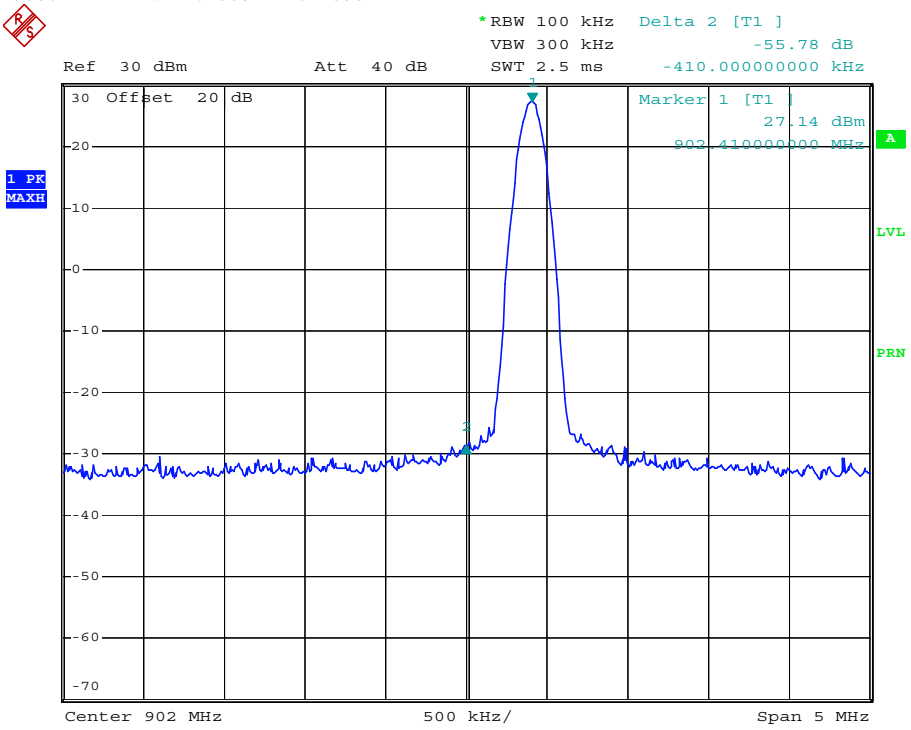
| | |
|---|---|
| Configuration: | Lowest Channel |

| Frequency (MHz) | Measured Value (dBm) | Limit (dBm) | Margin (dB) | Result |
|---|---|---|---|---|
| 902.4 | 27.11 | --- | --- | Fundamental |

| | |
|---|---|
| **Test Result:** | **Passed** |




Comment: EMV050145 Carrier Power Conducted: CH 0x00
Date: 11.APR.2005 14:47:36

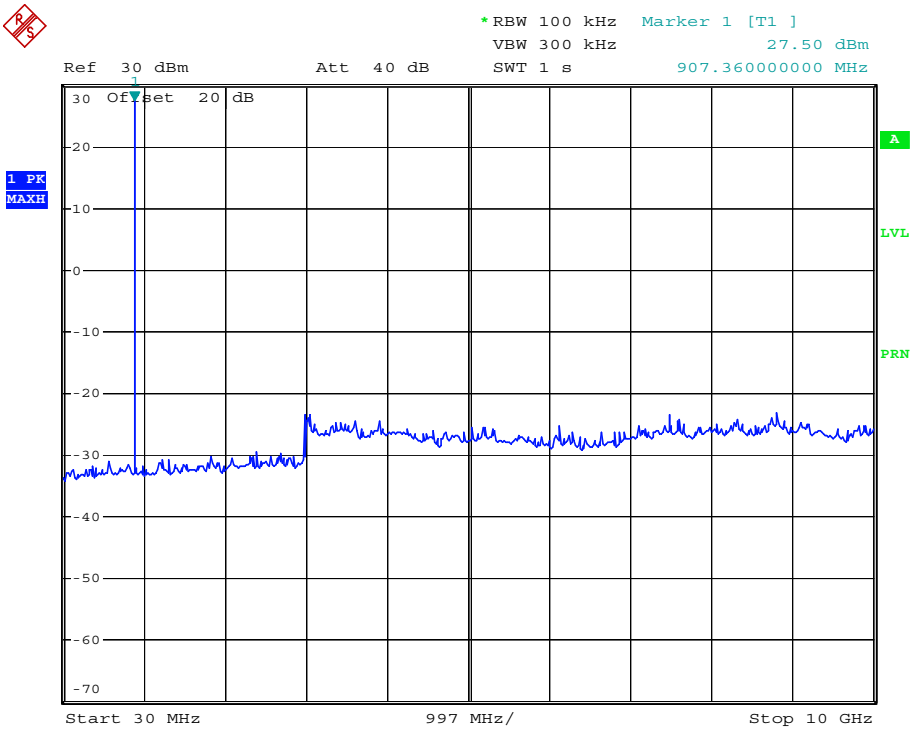



Comment: EMV050145 Carrier Power Conducted: CH 0x00
Date: 11.APR.2005 14:48:41

| | |
|---|---|
| Configuration: | Mid Channel |

| Frequency (MHz) | Measured Value (dBm) | Limit (dBm) | Margin (dB) | Result |
|---|---|---|---|---|
| 914.7 | 27.50 | --- | --- | Fundamental |

| | |
|---|---|
| **Test Result:** | **Passed** |

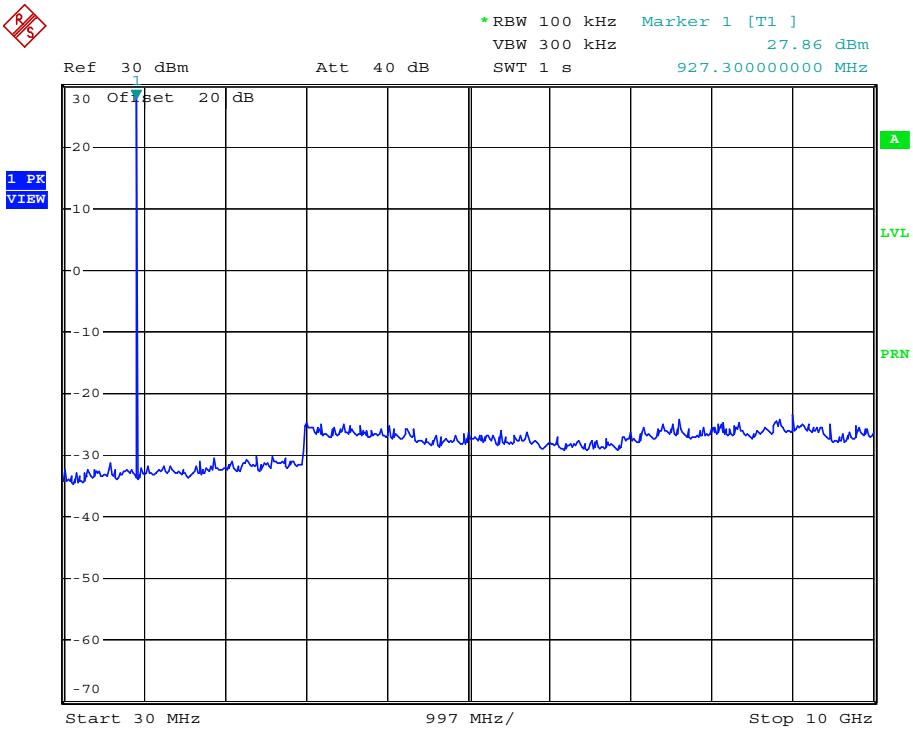



Comment: EMV050145 Carrier Power Conducted: CH 0x18
Date: 11.APR.2005 14:51:03

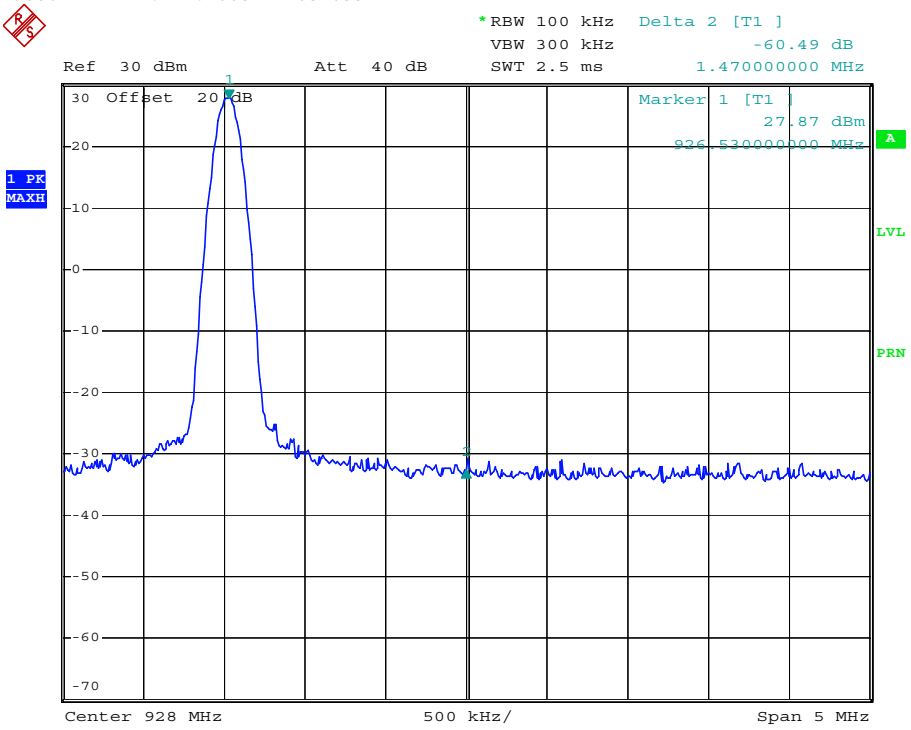
| Configuration: | Highest Channel |
|---|---|

| Frequency (MHz) | Measured Value (dBm) | Limit (dBm) | Margin (dB) | Result |
|---|---|---|---|---|
| 926.5 | 27.86 | --- | --- | Fundamental |

| **Test Result:** | **Passed** |
|---|---|




Comment: EMV050145 Carrier Power Conducted: CH 0x31
Date: 11.APR.2005 14:52:33




Comment: EMV050145 Carrier Power Conducted: CH 0x31
Date: 11.APR.2005 14:53:27

## Radiated Emissions 30 MHz – 10 GHz

| | | | |
|---|---|---|---|
| Rules and Specifications: | CFR 47 Part 15, section 15.109 (Class A)<br>IC ICES-003 Issue 4, section 5.4 | | |
| Guide: | ANSI C63.4 / CISPR 22 | | |
| Limit: | Frequency of Emission (MHz) | Field Strength (dBµV/m) | Measurement Distance (meters) |
| | 30 - 230 | 40.0 | 10 |
| | 230 - 1000 | 47.0 | 10 |
| | Above 1000 | 60.0 | 3 |

| | |
|---|---|
| Test Site: | Open Area Test Site (< 1GHz), Fully anechoic room (>1 GHz) |
| Distance: | Radiated Measurement |
| Date of Test: | 22 March 2005, 7 April 2005, 28 April 2005 |

| Frequency (MHz) | Antenna Polarization | Detector | Receiver Reading (dBµV) | Correction Factor (dB/m) | Final Value (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|
| 200.000 | horizontal | Quasi-Peak | 21.1 | 16.8 | 37.9 | 43.5 | 5.6 |
| 225.000 | horizontal | Quasi-Peak | 21.0 | 17.4 | 38.4 | 46.4 | 8.0 |
| 299.990 | horizontal | Quasi-Peak | 17.1 | 22.5 | 39.6 | 46.4 | 6.8 |
| 524.990 | horizontal | Quasi-Peak | 25.1 | 21.0 | 46.1 | 46.4 | **0.3** |
| 674.990 | horizontal | Quasi-Peak | 11.3 | 24.2 | 35.5 | 46.4 | 10.9 |
| 749.990 | horizontal | Quasi-Peak | 13.8 | 24.9 | 38.7 | 46.4 | 7.7 |
| 824.980 | horizontal | Quasi-Peak | 20.6 | 25.5 | 46.1 | 46.4 | **0.3** |
| 874.980 | horizontal | Quasi-Peak | 12.1 | 26.8 | 38.9 | 46.4 | 7.5 |
| 1048.000 | vertical | Peak | 15.9 | 26.9 | 42.8 | 54.0 | 11.2 |
| 1198.000 | vertical | Peak | 15.3 | 27.5 | 42.7 | 54.0 | 11.3 |

| | |
|---|---|
| **Test Results:** | **Passed** |

## Spurious Emissions - Radiated

| | |
|---|---|
| Rules and Specifications: | 15.247 (d) |
| Guide: | ANSI C63.4-2003 |
| Limit: | In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a). |

| | |
|---|---|
| Test Site: | Open Area Test Site (< 1GHz), Fully anechoic room (>1 GHz) |
| Distance: | Radiated Measurement |
| Date of Test: | 28 April 2005 |

| | |
|---|---|
| **Test Results:** | **Passed** |

| Tested on: | Lowest Channel |
|---|---|

| Frequency (MHz) | Antenna Polarization | Detector | Receiver Reading (dBµV) | Correction Factor (dB/m) | Pulse Train Correction (dB) | Final Value (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| 4626.400 | vertical | Peak | 14.2 | 31.9 | | 46.1 | 54.0 | **7.9** |
| 5553.600 | vertical | Peak | 21.4 | 32.5 | | 53.9 | 68.7 | 14.8 |

| **Test Results:** | **Passed** |
|---|---|

| Tested on: | Mid Channel |
|---|---|

| Frequency (MHz) | Antenna Polarization | Detector | Receiver Reading (dBµV) | Correction Factor (dB/m) | Pulse Train Correction (dB) | Final Value (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| 1816.000 | horizontal | Peak | 12.1 | 30.1 | | 42.2 | 67.9 | 25.7 |
| 5443.400 | horizontal | Peak | 20.7 | 32.5 | | 53.2 | 54.0 | **0.8** |

| **Test Results:** | **Passed** |
|---|---|

| Tested on: | Highest Channel |
|---|---|

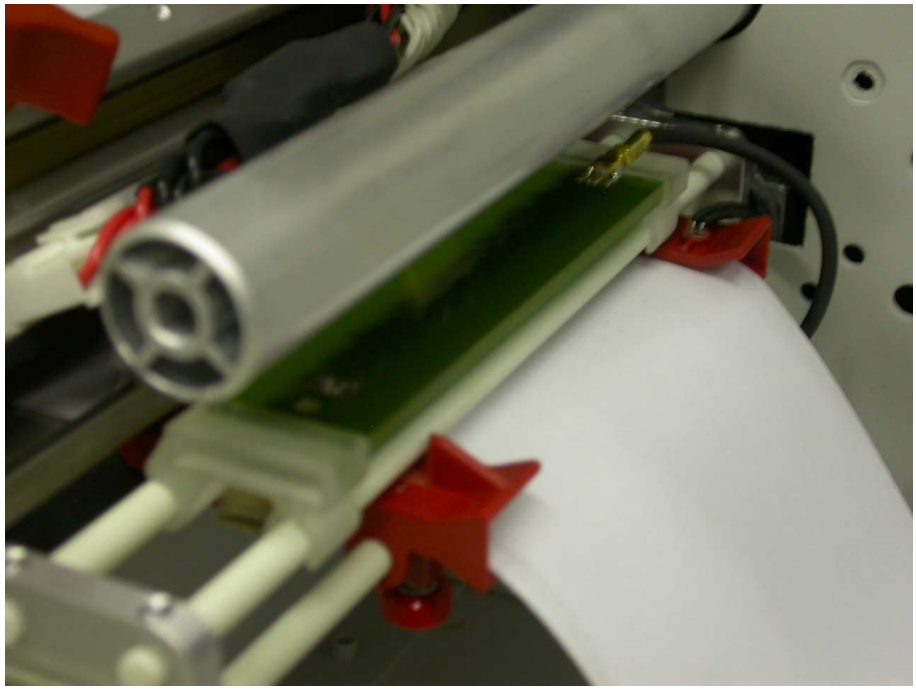
| Frequency (MHz) | Antenna Polarization | Detector | Receiver Reading (dBµV) | Correction Factor (dB/m) | Pulse Train Correction (dB) | Final Value (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| 3706.000 | horizontal | Peak | 11.5 | 36.5 | | 48.1 | 54.0 | 5.9 |
| 4630.200 | horizontal | Peak | 13.7 | 31.9 | | 45.6 | 54.0 | 8.4 |
| 5565.000 | horizontal | Peak | 18.8 | 32.5 | | 51.3 | 64.8 | 13.5 |

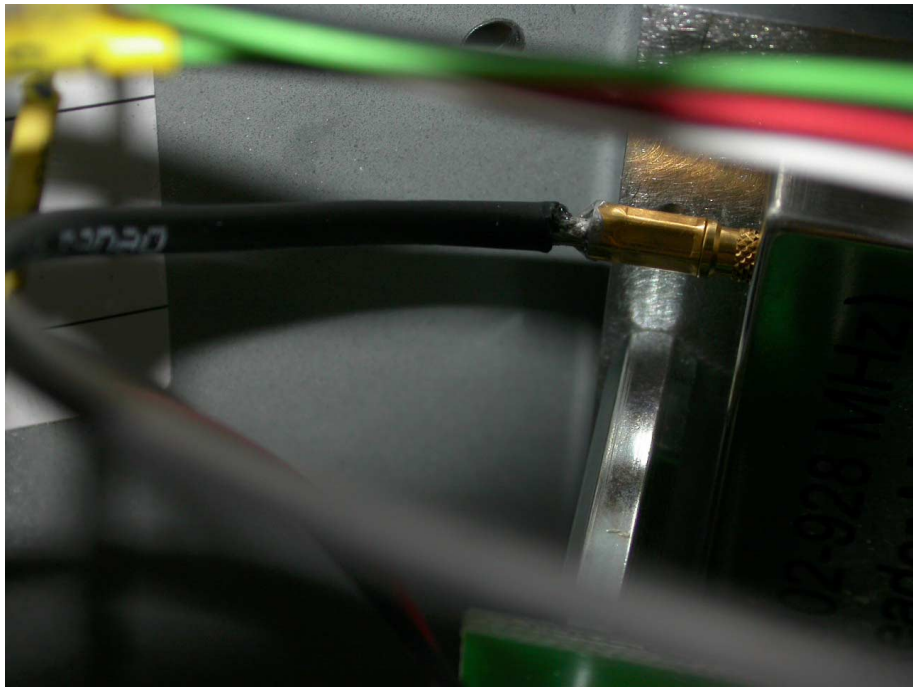
| **Test Results:** | **Passed** |
|---|---|

## Antenna connector requirement

| | |
|---|---|
| Rules and Specifications: | 15.203 |
| Guide: | --- |
| Limit: | An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. |

| | |
|---|---|
| Test Result | Passed |
| | The UUT employs an integrated antenna: |
| | The UUT employs no user accessible antenna connector.<br>The internal antenna connector is MMCX style. |





## RF Exposure

| | |
|---|---|
| Rules and Specifications: | 15.247 (b) (4) |
| Guide: | OET Bulletin 65, Edition 97-01 |
| Limit: | According to §15.247(b)(4) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines. |

**Limits for Maximum Permissive Exposure (MPE)**
**General Population / Uncontrolled Exposure**

| Frequency Range (MHz) | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density (mW/cm2 | Averaging Time (minute) |
|---|---|---|---|---|
| 30 – 1500 | --- | --- | f/1500 = 0.61 mW/cm$^2$ @ 915 MHz | 30 |

f = frequency in MHz

MPE Prediction of MPE according to equation from page 19 of OET Bulletin 65, Edition 97-01

**$S = PG/4\pi R^2$**

Where: S = power density
P = power input to antenna
G = power gain of the antenna relativ to an isotropic radiator
R = Distance to the center of radiation of the antenna

Maximum output power at antenna input terminal: **27.90 dBm = 616.6 mW**
Prediction distance: **3 m**
Antenna gain: (calculated) **-37.0 dBi = 2.00 * 10$^{-4}$ (numerical gain)**

Power density at 20 cm: **0.0000245 mW/cm$^2$**

| | |
|---|---|
| **Test Result:** | **Passed** |

## Conducted Powerline Emission Measurement

| | | | |
|---|---|---|---|
| Rules and Specifications: | 15.107 (b) (Class A) | | |
| Guide: | CISPR 22 | | |
| Limit: | Frequency of Emission (MHz) | Conducted Limit (dBuV) | |
| | | Quasi-peak | Average |
| | 0.15-0.5<br>0.5 – 30 | 79<br>73 | 66<br>60 |

| | |
|---|---|
| | |
| Test Site: | EMC Lab. - Shielded Room 1 |
| Distance: | Conducted Measurement |
| Date of Test: | May 2nd, 2005 |

| | |
|---|---|
| **Test Results:** | **Passed** |

| Tested on: | L1 |
|---|---|

| Frequency (MHz) | Detector | Reading Value (dBµV) | Correction Factor (dB) | Final Value (dBµV) | CFR 47 Part 15 Limit (dBµV) | CFR 47 Part 15 Margin (dB) | RSS-210 Limit (dBµV) | RSS-210 Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| 0.237 | Quasi-Peak | 62.4 | 0.0 | 62.4 | 79.0 | **16.6** | | |
| 17.090 | Quasi-Peak | 34.2 | 0.0 | 34.2 | 73.0 | 38.8 | 48.0 | 13.8 |
| 18.040 | Quasi-Peak | 38.0 | 0.0 | 38.0 | 73.0 | 35.0 | 48.0 | **10.0** |
| 19.110 | Quasi-Peak | 36.5 | 0.0 | 36.5 | 73.0 | 36.5 | 48.0 | 11.5 |
| 23.020 | Quasi-Peak | 31.5 | 0.0 | 31.5 | 73.0 | 41.5 | 48.0 | 16.5 |

| Tested on: | N |
|---|---|

| Frequency (MHz) | Detector | Reading Value (dBµV) | Correction Factor (dB) | Final Value (dBµV) | CFR 47 Part 15 Limit (dBµV) | CFR 47 Part 15 Margin (dB) | RSS-210 Limit (dBµV) | RSS-210 Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| 0.237 | Quasi-Peak | 62.5 | 0.0 | 62.5 | 79.0 | **16.5** | | |
| 17.090 | Quasi-Peak | 38.3 | 0.0 | 38.3 | 73.0 | 34.7 | 48.0 | 9.7 |
| 18.040 | Quasi-Peak | 40.5 | 0.0 | 40.5 | 73.0 | 32.5 | 48.0 | **7.5** |
| 19.100 | Quasi-Peak | 39.5 | 0.0 | 39.5 | 73.0 | 33.5 | 48.0 | 8.5 |
| 21.600 | Quasi-Peak | 37.5 | 0.0 | 37.5 | 73.0 | 35.5 | 48.0 | 10.5 |

**Sample calculation of final values:**

Final Value (dBµV) = Reading Value (dBµV) + Correction Factor (dB)

## 9. Referenced Regulations

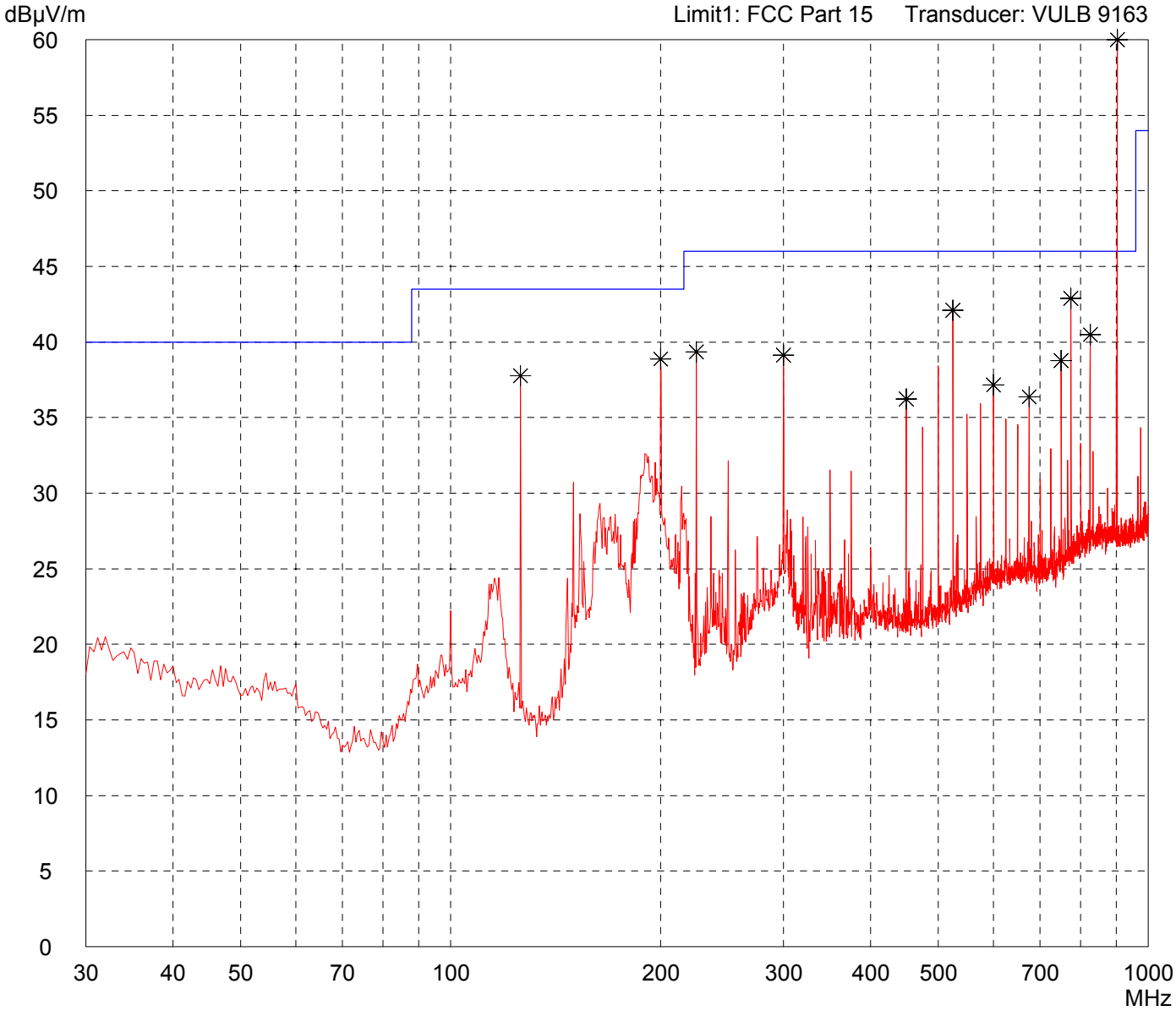
All tests were performed with reference to the following regulations and standards:

| | | | |
|---|---|---|---|
| ☒ | CFR 47 Part 2 | Code of Federal Regulations Part 2 (Frequency allocation and radio treaty matters; General rules and regulations) of the Federal Communication Commission (FCC) | October 10, 2004 |
| ☒ | CFR 47 Part 15 | Code of Federal Regulations Part 15 (Radio Frequency Devices) of the Federal Communication Commission (FCC) | April 5, 2005 |
| ☒ | ANSI C63.4 | American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz | December 11, 2003 (published on January 30, 2004) |
| ☒ | RSS-210 | Radio Standards Specification RSS-210 Issue 5 for Low Power Licence-Exempt Radiocommunication Devices (All Frequency Bands), published by Industry Canada | November 2001 |
| ☒ | RSS-102 | Radio Standards Specification RSS-102 Issue 1: Evaluation Procedure for Mobile and Portable Radio Transmitters with respect to Health Canada's Safety Code 6 for Exposure of Humans to Radio Frequency Fields, published by Industry Canada | September 1999 |
| ☐ | ICES-003 | Interference-Causing Equipment Standard ICES-003 Issue 4 for Digital Apparatus, published by Industry Canada | February 2004 |
| ☒ | CISPR 22 | Third Edition of the International Special Committee on Radio Interference (CISPR), Pub. 22, "Information Technology Equipment – Radio Disturbance Characteristics – Limits and Methods of Measurement" | 1997 |
| ☐ | CAN/CSA-CEI/IEC CISPR 22 | Limits and Methods of Measurement of Radio Disturbance Characteristics of Information Technology Equipment | 2002 |
| ☒ | TRC-43 | Notes Regarding Designation of Emission (Including Necessary Bandwidth and Classification), Class of Station and Nature of Service, published by Industry Canada | October 9, 1982 |

## Charts taken during testing

# Radiated Emission Test 30 MHz - 1 GHz
# acc. to FCC Part 15 (Fully Anechoic Chamber)

| | |
|---|---|
| Model: Avery 64-05 | Comment: - AC 115 V power supply<br>- Testmode: Lowest Channel (0x00) |
| Serial no.: --- | |
| Applicant: EMV-Testhaus GmbH | |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3 metres Horizontal Polarization | |
| Date of test: 04/28/2005 — Operator: M. Steindl | |
| Test performed: automatically — File name: default.emi | |
| Detector: Peak | List of values: 10 dB Margin — 50 Subranges |

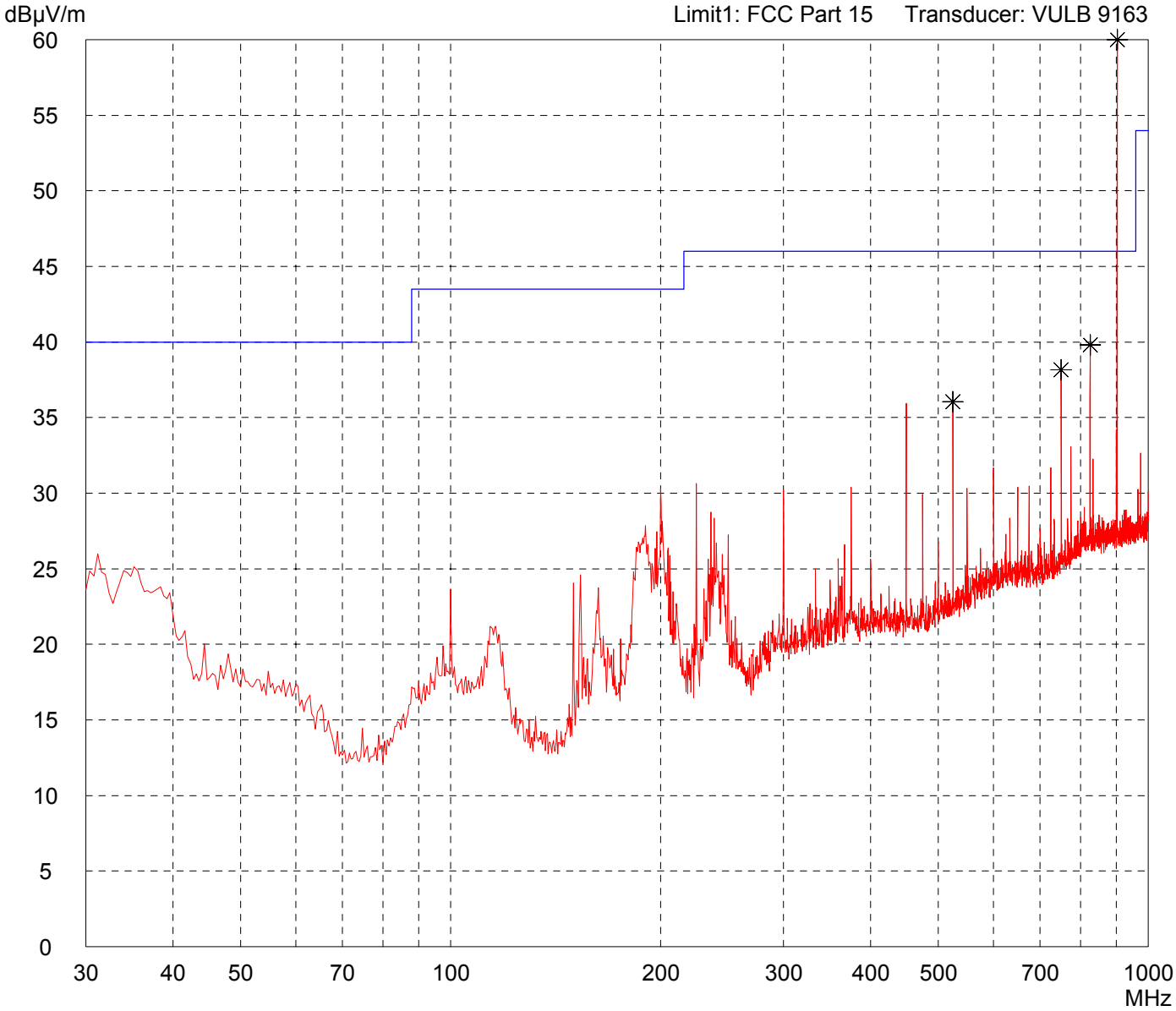



| | |
|---|---|
| Result: Prescan | Project file: 51323-50195 — Page of Pages |

# Radiated Emission Test 30 MHz - 1 GHz
# acc. to FCC Part 15 (Fully Anechoic Chamber)

| | |
|---|---|
| Model: Avery 64-05 | Comment: - AC 115 V power supply<br>- Testmode: Lowest Channel (0x00) |
| Serial no.: --- | |
| Applicant: EMV-Testhaus GmbH | |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3 metres<br>Vertical Polarization | |
| Date of test: 04/28/2005 — Operator: M. Steindl | |
| Test performed: automatically — File name: default.emi | |

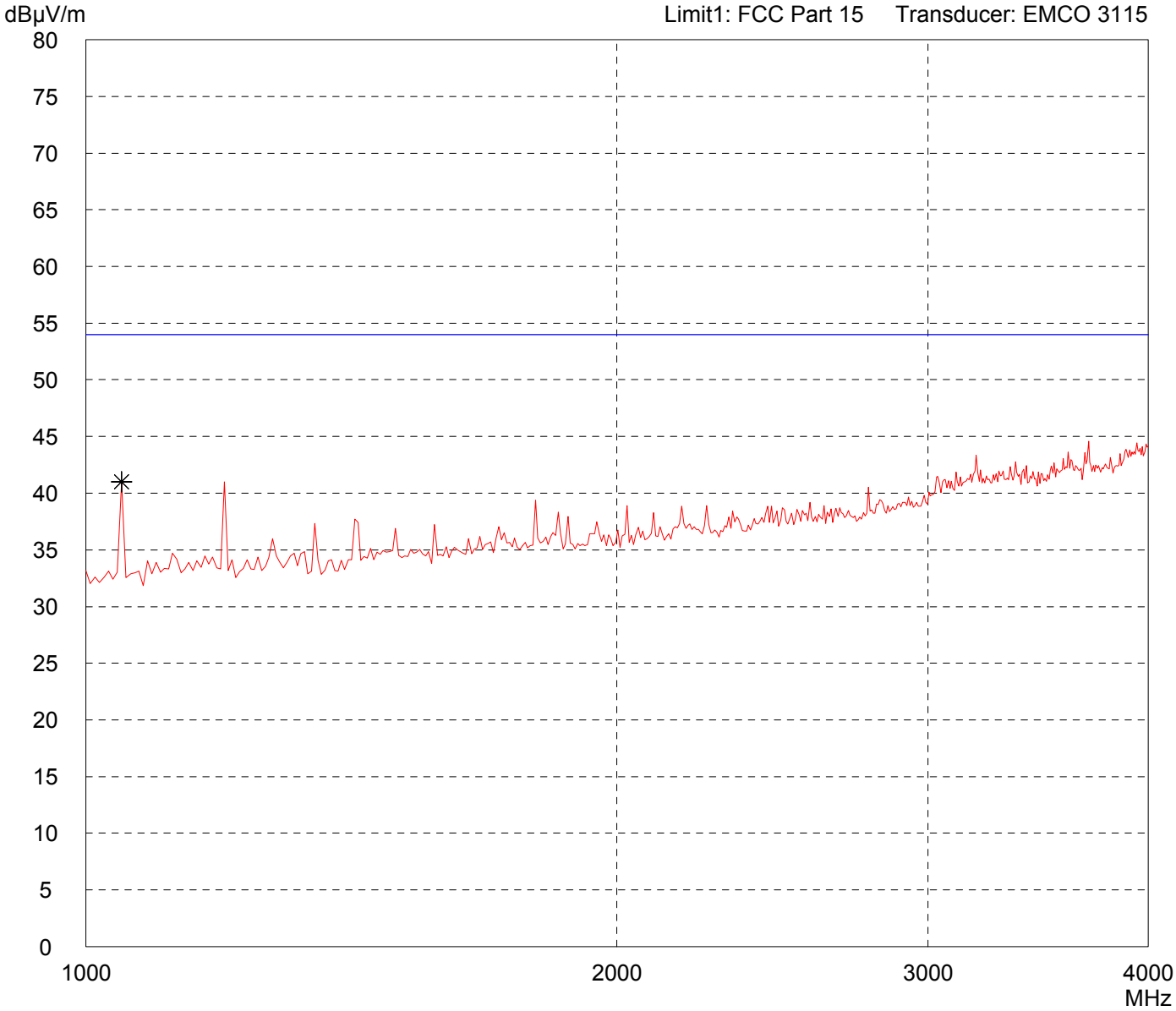
| | |
|---|---|
| Detector: Peak | List of values: 10 dB Margin — 50 Subranges |




| | |
|---|---|
| Result: Prescan | Project file: 51323-50195 — Page of Pages |

# Radiated Emission Test 1 GHz - 4 GHz
# acc. to FCC Part 15 (EMCO 3115)

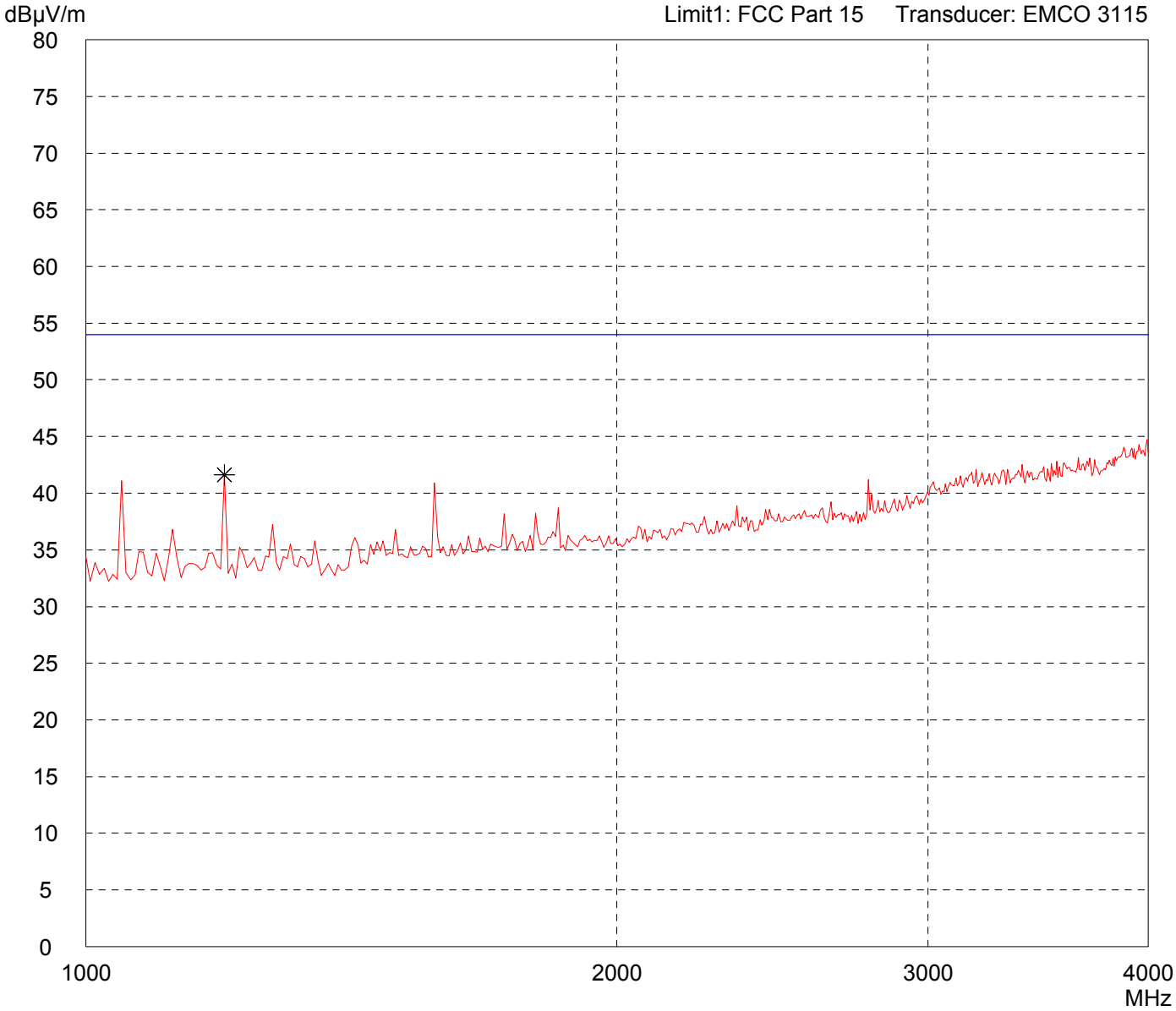
| | |
|---|---|
| Model: Avery 64-05 | Comment: - AC 115 V power supply |
| Serial no.: --- | - Testmode: Lowest Channel (0x00) |
| Applicant: EMV-Testhaus GmbH | - Note: With WHK1000S-10SS high-pass-filter |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3 metres Horizontal Polarization | |
| Date of test: 04/28/2005 — Operator: M. Steindl | |
| Test performed: automatically — File name: default.emi | |
| Detector: Peak | List of values: Selected by hand |




| | |
|---|---|
| Result: Prescan | Project file: 51323-50195 Page of Pages |

# Radiated Emission Test 1 GHz - 4 GHz
# acc. to FCC Part 15 (EMCO 3115)

| | |
|---|---|
| Model: Avery 64-05 | Comment: - AC 115 V power supply |
| Serial no.: --- | - Testmode: Lowest Channel (0x00) |
| Applicant: EMV-Testhaus GmbH | - Note: With WHK1000S-10SS high-pass-filter |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3 metres, Vertical Polarization | |
| Date of test: 04/28/2005 — Operator: M. Steindl | |
| Test performed: automatically — File name: default.emi | |
| Detector: Peak | List of values: Selected by hand |

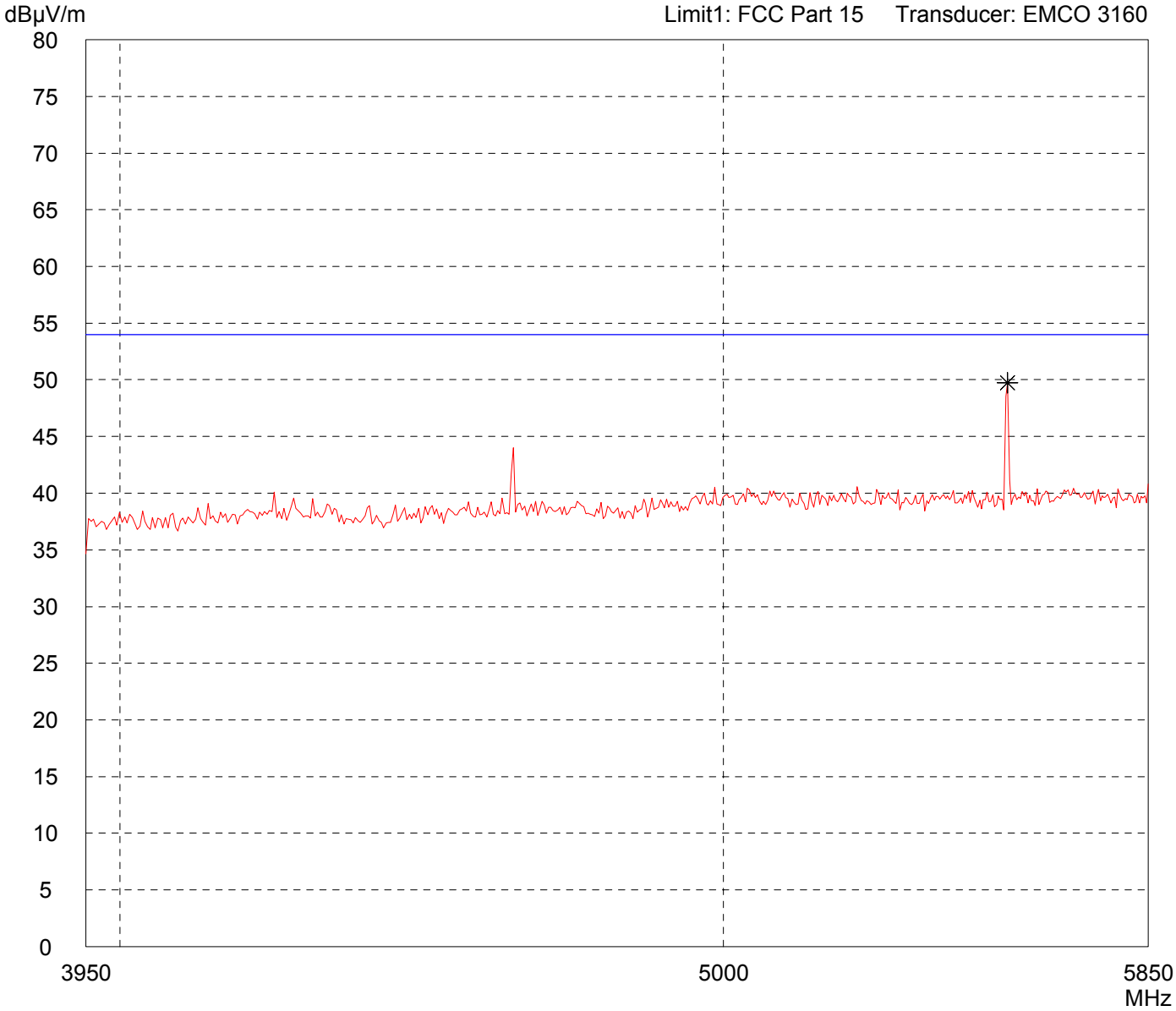



| | |
|---|---|
| Result: Prescan | Project file: 51323-50195 Page of Pages |

# Radiated Emission Test 3.95 GHz - 5.85 GHz
# acc. to FCC Part 15 (EMCO 3160)

| | |
|---|---|
| Model: Avery 64-05 | Comment: - AC 115 V power supply |
| Serial no.: --- | - Testmode: Lowest Channel (0x00) |
| Applicant: EMV-Testhaus GmbH | - Note: With WHK/M3/13G-10SS high-pass-filter |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3 metres Horizontal Polarization | |
| Date of test: 04/28/2005 — Operator: M. Steindl | |
| Test performed: automatically — File name: default.emi | |

| | |
|---|---|
| Detector: Peak | List of values: 10 dB Margin — 50 Subranges |

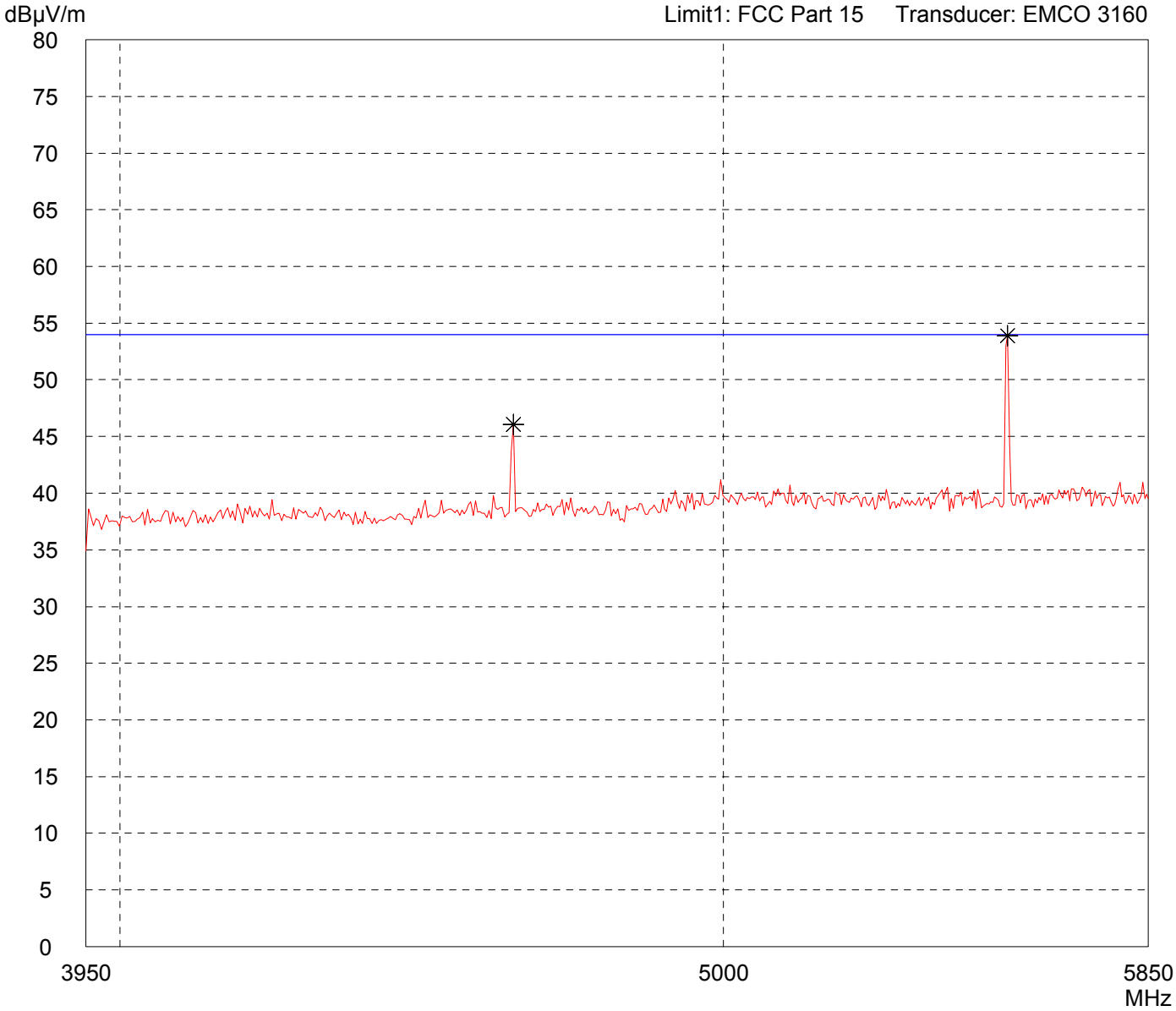



| | |
|---|---|
| Result: Prescan | Project file: 51323-50195 — Page of Pages |

# Radiated Emission Test 3.95 GHz - 5.85 GHz
# acc. to FCC Part 15 (EMCO 3160)

| | |
|---|---|
| Model: Avery 64-05 | Comment: - AC 115 V power supply |
| Serial no.: --- | - Testmode: Lowest Channel (0x00) |
| Applicant: EMV-Testhaus GmbH | - Note: With WHK/M3/13G-10SS high-pass-filter |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3 metres<br>Vertical Polarization | |
| Date of test: 04/28/2005 — Operator: M. Steindl | |
| Test performed: automatically — File name: default.emi | |

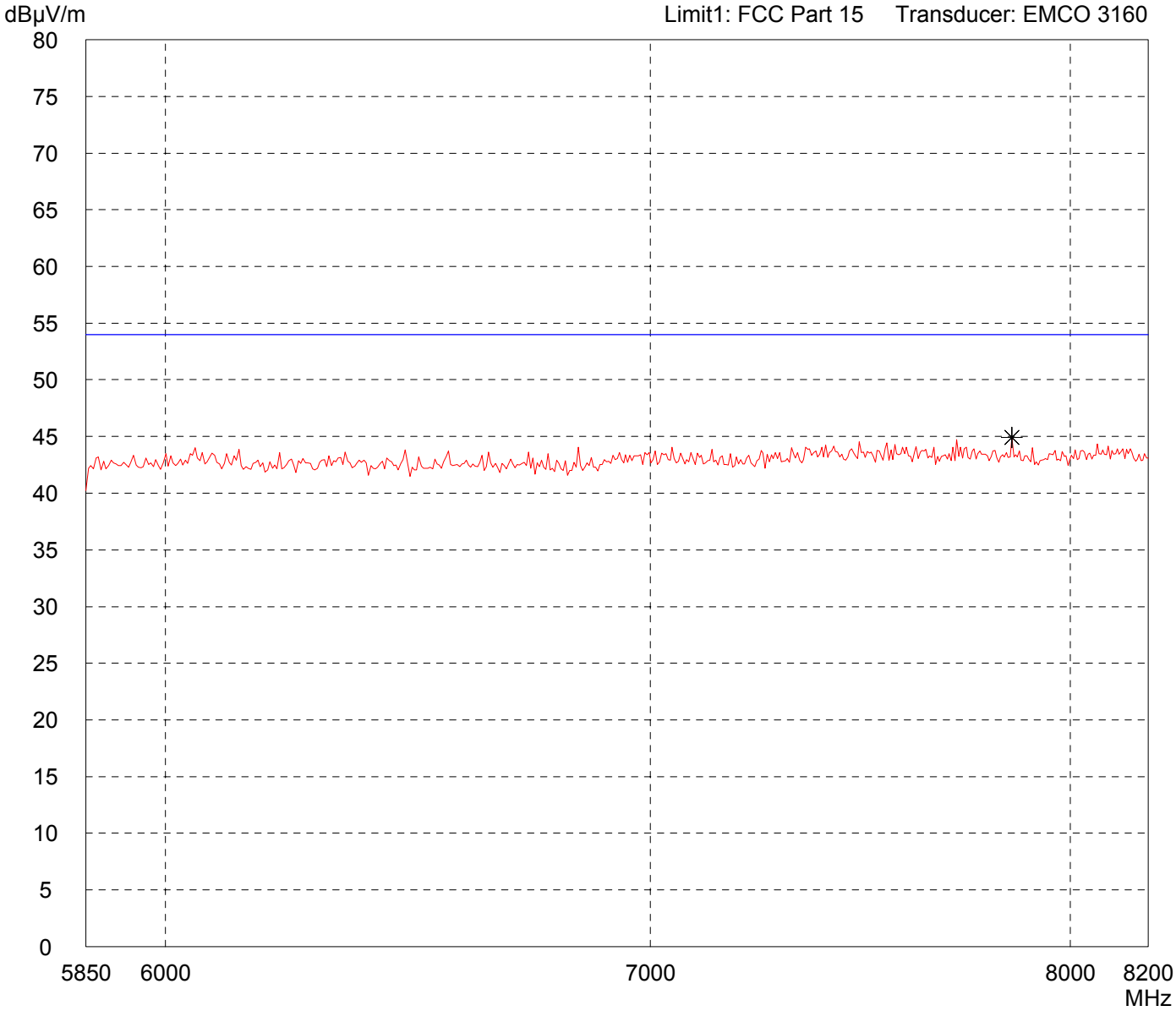
| | |
|---|---|
| Detector: Peak | List of values: 10 dB Margin — 50 Subranges |




| | |
|---|---|
| Result: Prescan | Project file: 51323-50195 — Page of Pages |

# Radiated Emission Test 5.85 GHz - 8.2 GHz
# acc. to FCC Part 15 (EMCO 3160)

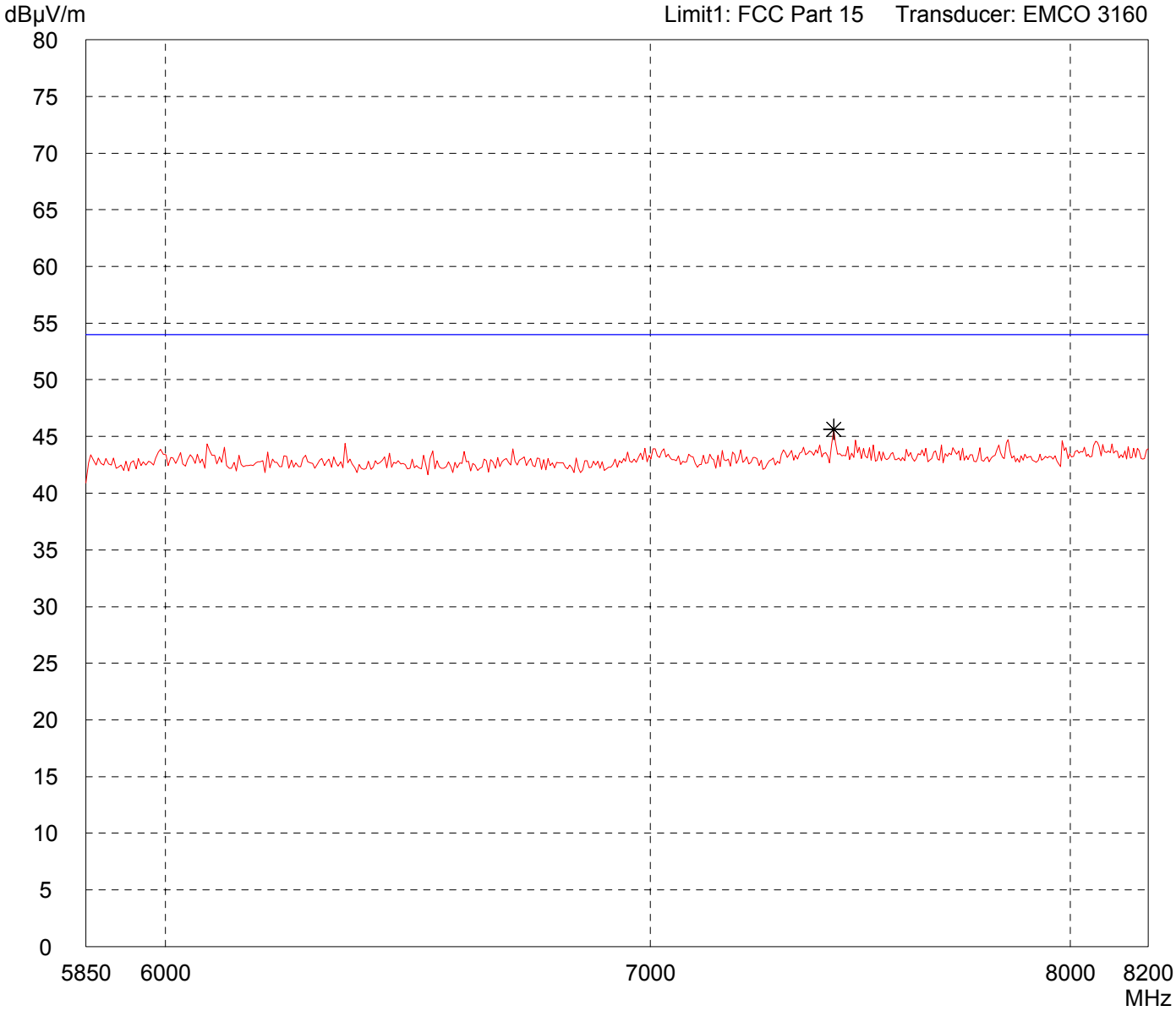
| | |
|---|---|
| Model: Avery 64-05 | Comment: - AC 115 V power supply |
| Serial no.: --- | - Testmode: Lowest Channel (0x00) |
| Applicant: EMV-Testhaus GmbH | - Note: With WHK/M3/13G-10SS high-pass-filter |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3 metres Horizontal Polarization | |
| Date of test: 04/28/2005 — Operator: M. Steindl | |
| Test performed: automatically — File name: default.emi | |
| Detector: Peak | List of values: Selected by hand |




| | |
|---|---|
| Result: Prescan | Project file: 51323-50195 Page of Pages |

# Radiated Emission Test 5.85 GHz - 8.2 GHz
# acc. to FCC Part 15 (EMCO 3160)

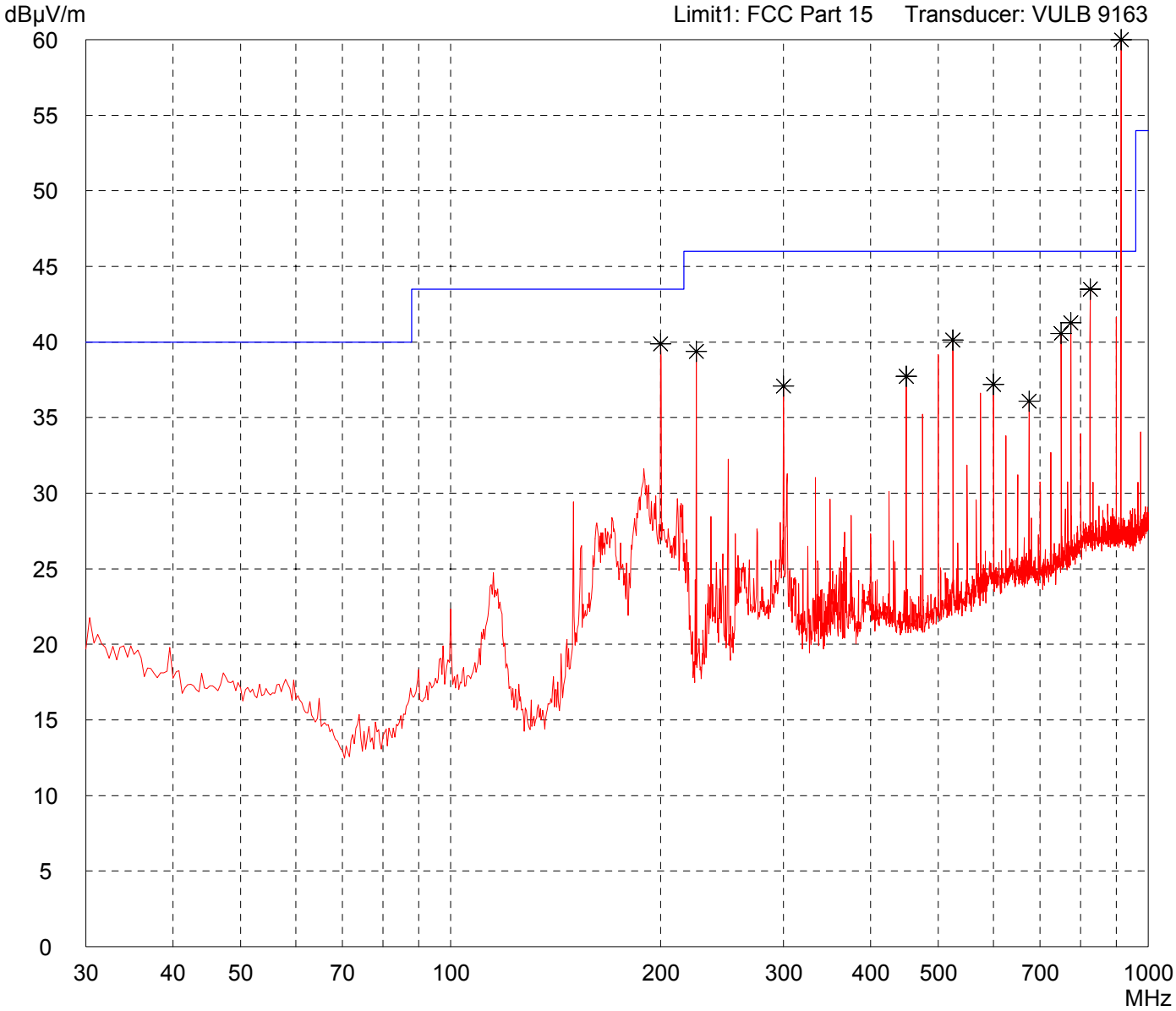
| | |
|---|---|
| Model: Avery 64-05 | Comment: - AC 115 V power supply |
| Serial no.: --- | - Testmode: Lowest Channel (0x00) |
| Applicant: EMV-Testhaus GmbH | - Note: With WHK/M3/13G-10SS high-pass-filter |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3 metres<br>Vertical Polarization | |
| Date of test: 04/28/2005 — Operator: M. Steindl | |
| Test performed: automatically — File name: default.emi | |
| Detector: Peak | List of values: Selected by hand |




| | |
|---|---|
| Result: Prescan | Project file: 51323-50195 Page of Pages |

# Radiated Emission Test 30 MHz - 1 GHz
# acc. to FCC Part 15 (Fully Anechoic Chamber)

| | |
|---|---|
| Model: Avery 64-05 | Comment: - AC 115 V power supply<br>- Testmode: Lowest Channel (0x18) |
| Serial no.: --- | |
| Applicant: EMV-Testhaus GmbH | |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3 metres Horizontal Polarization | |
| Date of test: 04/28/2005 — Operator: M. Steindl | |
| Test performed: automatically — File name: default.emi | |
| Detector: Peak | List of values: 10 dB Margin — 50 Subranges |

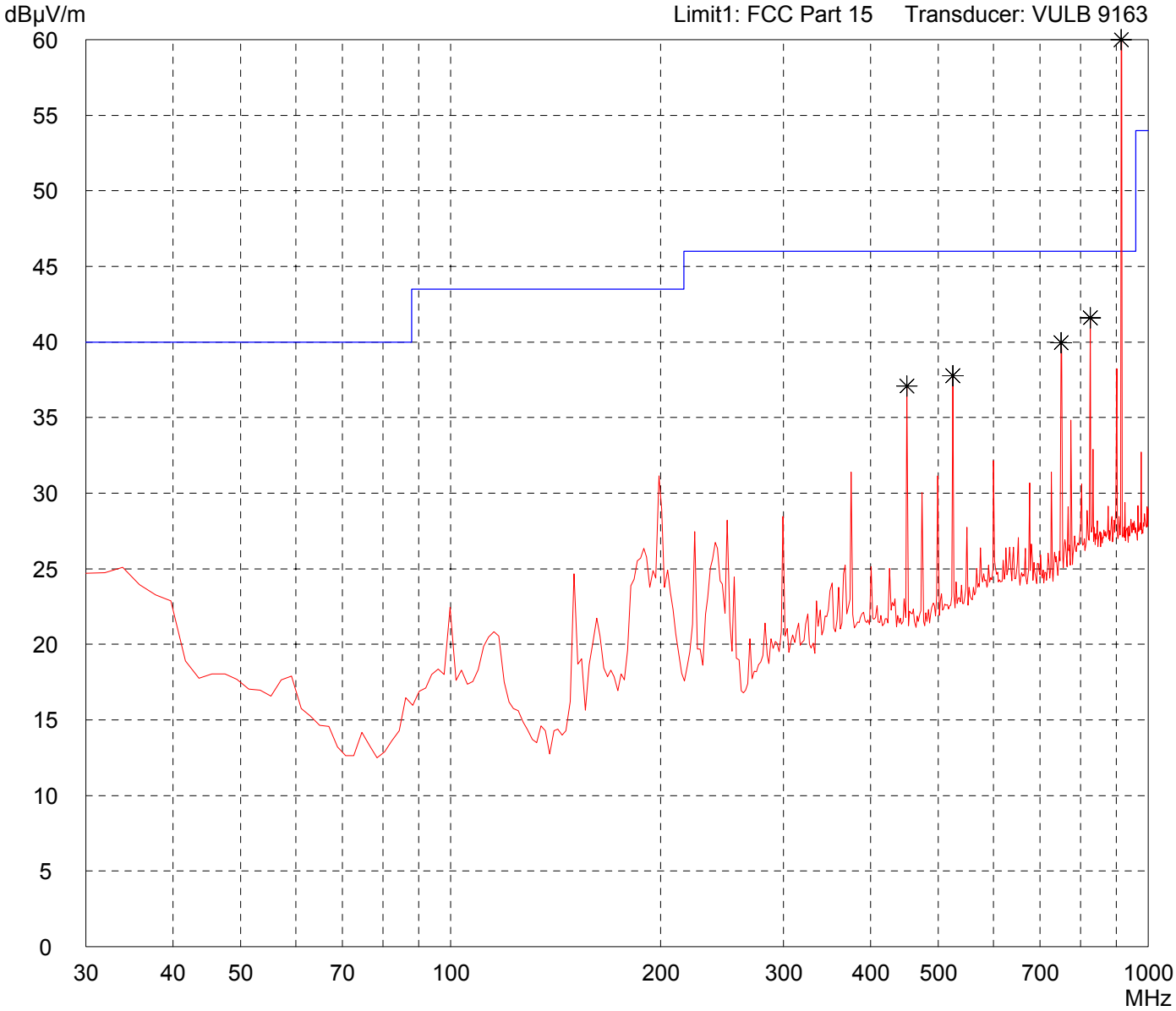



| | |
|---|---|
| Result: Prescan | Project file: 51323-50195 — Page of Pages |

# Radiated Emission Test 30 MHz - 1 GHz
# acc. to FCC Part 15 (Fully Anechoic Chamber)

| | |
|---|---|
| Model: Avery 64-05 | Comment: - AC 115 V power supply<br>- Testmode: Lowest Channel (0x18) |
| Serial no.: --- | |
| Applicant: EMV-Testhaus GmbH | |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3 metres<br>Vertical Polarization | |
| Date of test: 04/28/2005 — Operator: M. Steindl | |
| Test performed: automatically — File name: default.emi | |

| | |
|---|---|
| Detector: Peak | List of values: 10 dB Margin — 50 Subranges |

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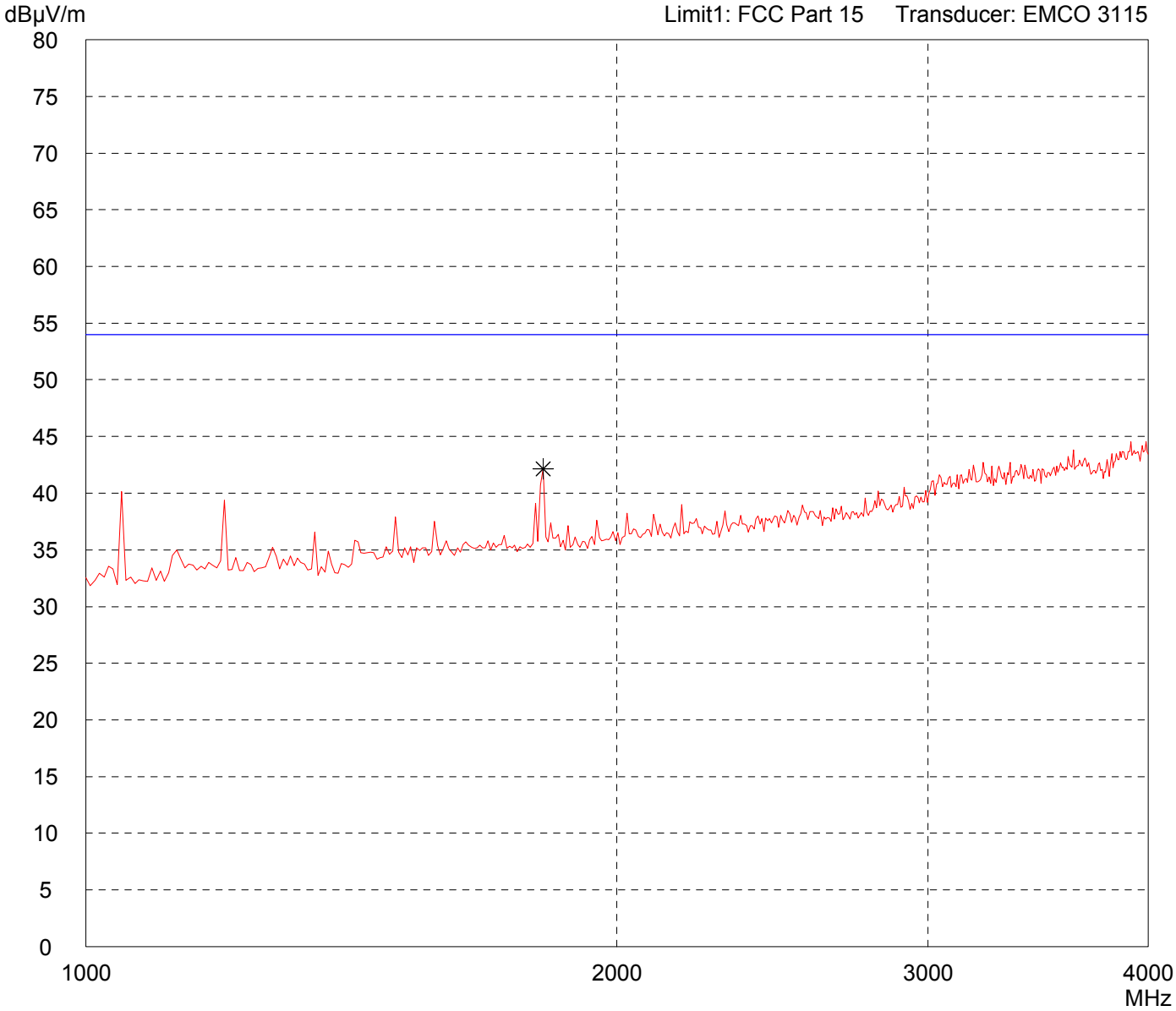
|---|---|
| Result: Prescan | Project file: 51323-50195 — Page of Pages |

# Radiated Emission Test 1 GHz - 4 GHz
# acc. to FCC Part 15 (EMCO 3115)

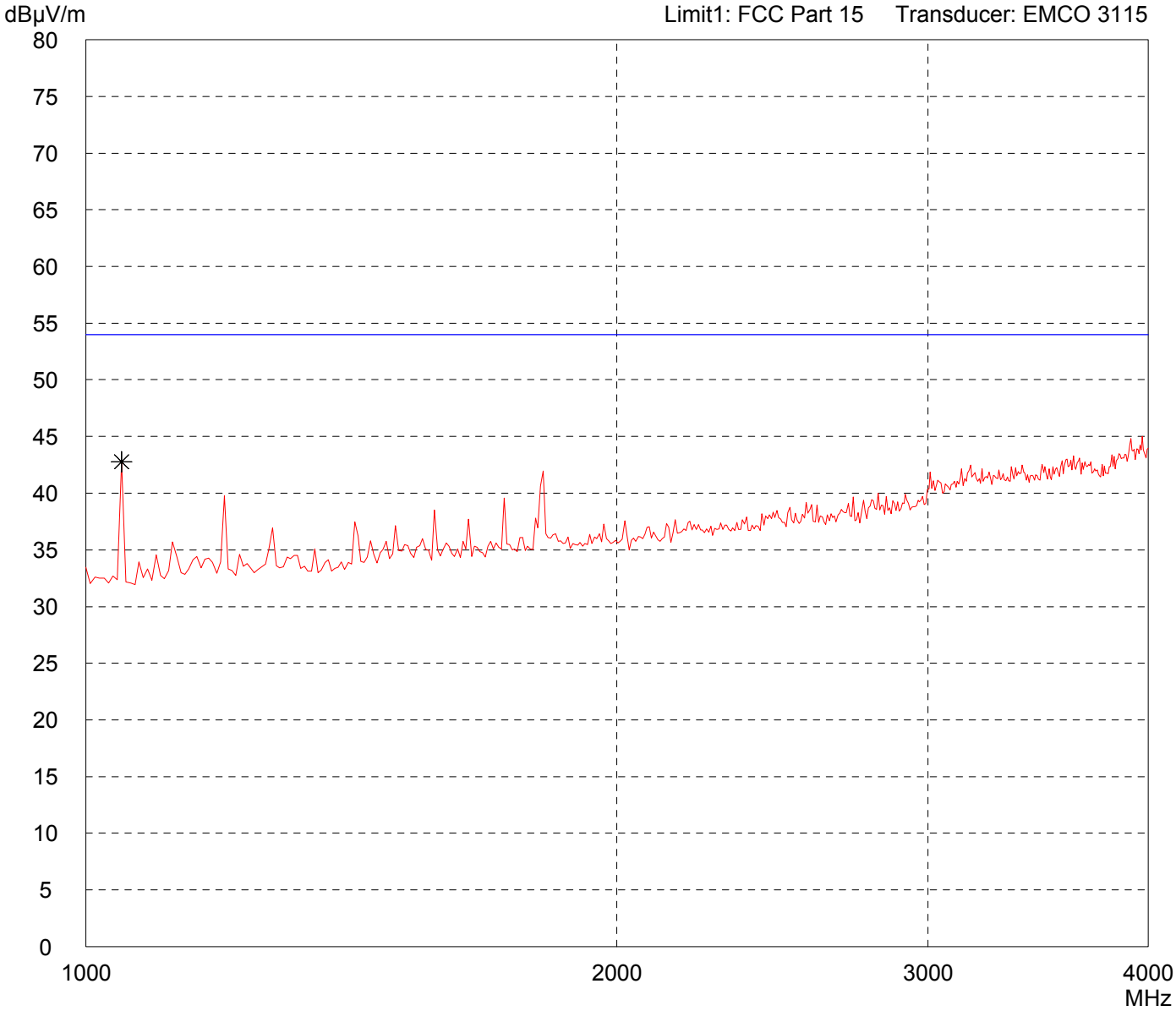
| | |
|---|---|
| Model: Avery 64-05 | Comment: - AC 115 V power supply |
| Serial no.: --- | - Testmode: Mid Channel (0x18) |
| Applicant: EMV-Testhaus GmbH | - Note: With WHK1000S-10SS high-pass-filter |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3 metres Horizontal Polarization | |
| Date of test: 04/28/2005 — Operator: M. Steindl | |
| Test performed: automatically — File name: default.emi | |
| Detector: Peak | List of values: Selected by hand |




| | |
|---|---|
| Result: Prescan | Project file: 51323-50195 Page of Pages |

# Radiated Emission Test 1 GHz - 4 GHz
# acc. to FCC Part 15 (EMCO 3115)

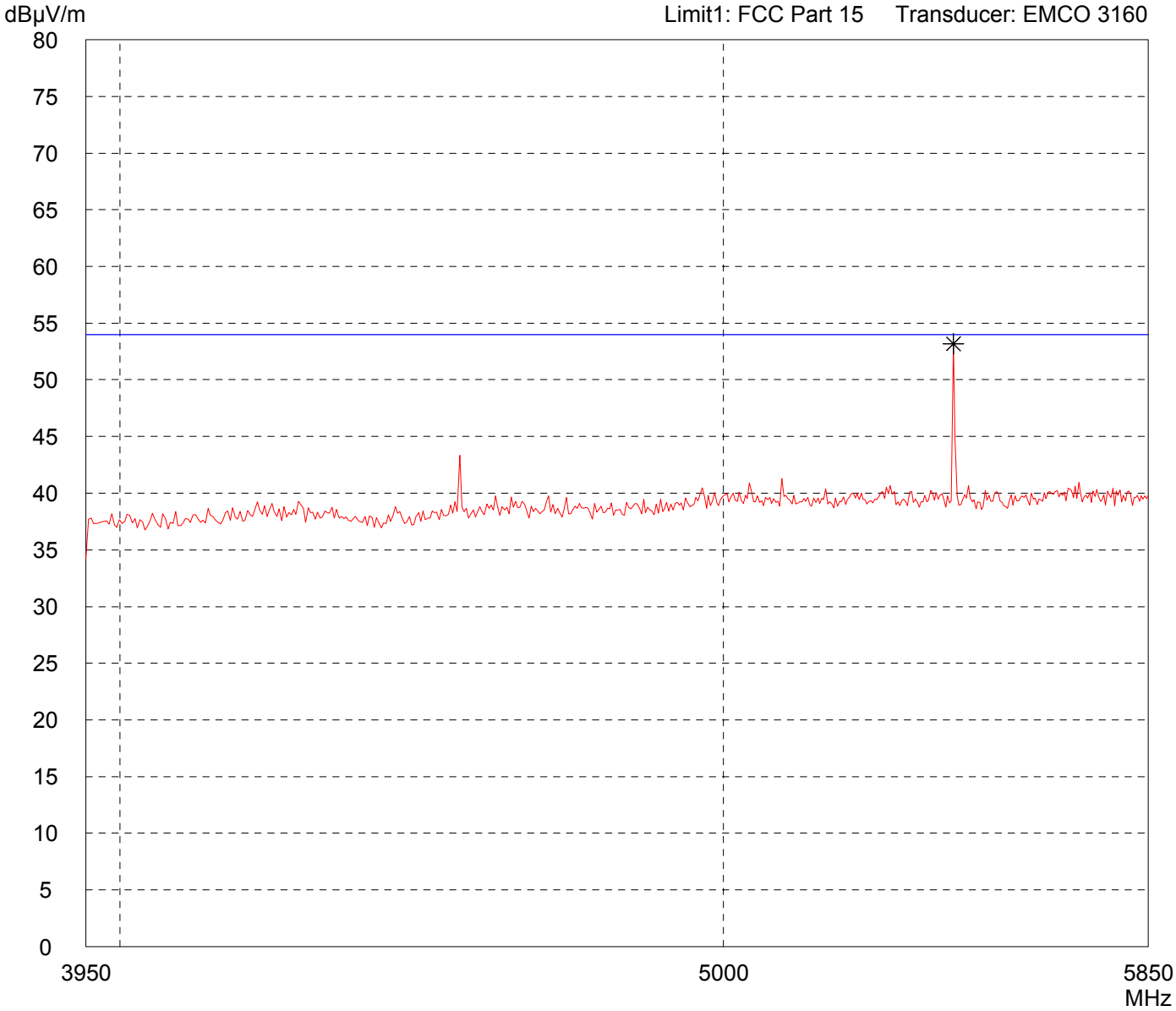
| | |
|---|---|
| Model: Avery 64-05 | Comment: - AC 115 V power supply |
| Serial no.: --- | - Testmode: Mid Channel (0x18) |
| Applicant: EMV-Testhaus GmbH | - Note: With WHK1000S-10SS high-pass-filter |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3 metres Vertical Polarization | |
| Date of test: 04/28/2005 — Operator: M. Steindl | |
| Test performed: automatically — File name: default.emi | |
| Detector: Peak | List of values: Selected by hand |




| | |
|---|---|
| Result: Prescan | Project file: 51323-50195 Page of Pages |

# Radiated Emission Test 3.95 GHz - 5.85 GHz
# acc. to FCC Part 15 (EMCO 3160)

| | |
|---|---|
| Model: Avery 64-05 | Comment: - AC 115 V power supply |
| Serial no.: --- | - Testmode: Mid Channel (0x18) |
| Applicant: EMV-Testhaus GmbH | - Note: With WHK/M3/13G-10SS high-pass-filter |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3 metres Horizontal Polarization | |
| Date of test: 04/28/2005 — Operator: M. Steindl | |
| Test performed: automatically — File name: default.emi | |
| Detector: Peak | List of values: Selected by hand |

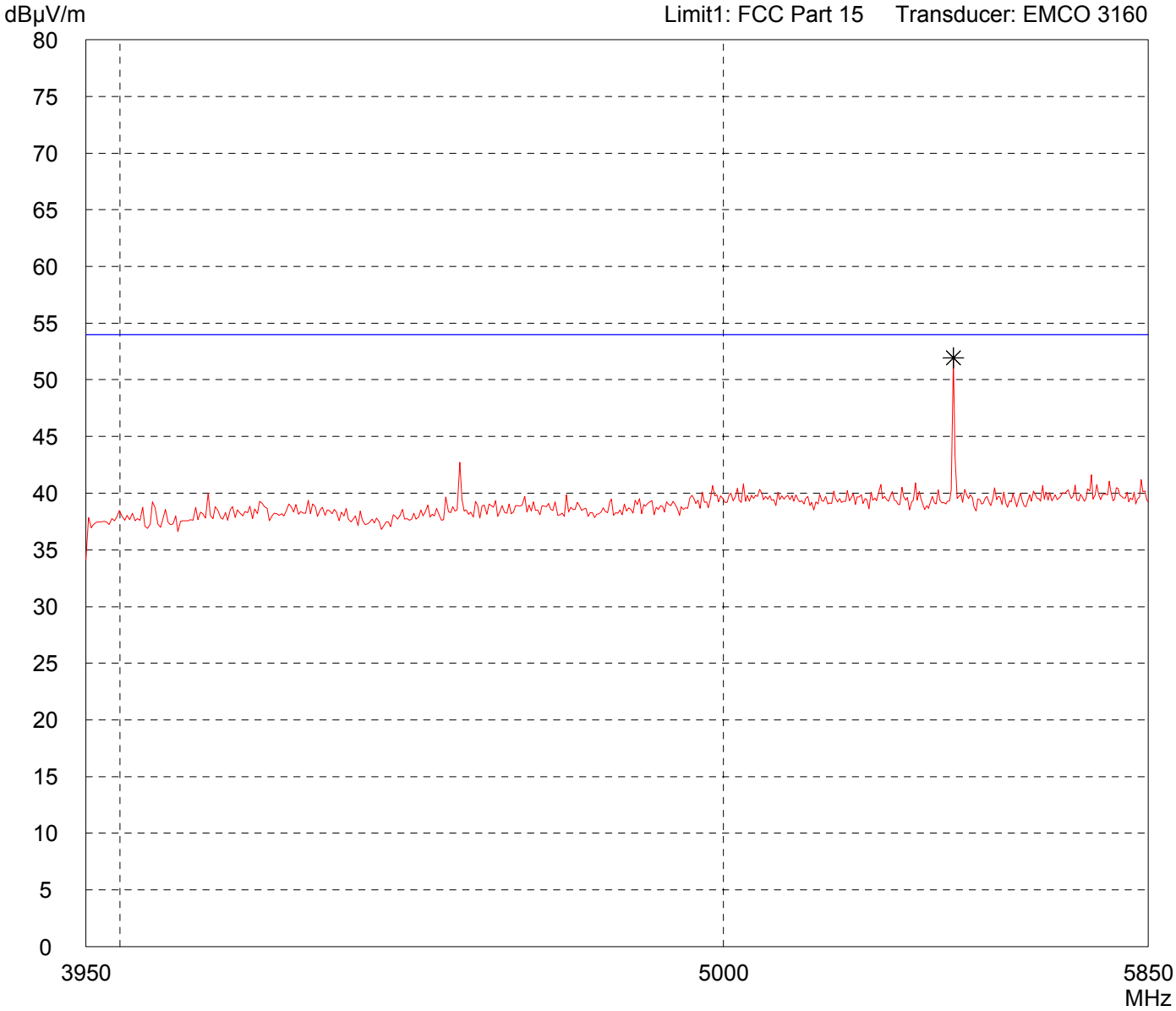



| | |
|---|---|
| Result: Prescan | Project file: 51323-50195 Page of Pages |

# Radiated Emission Test 3.95 GHz - 5.85 GHz
# acc. to FCC Part 15 (EMCO 3160)

| | |
|---|---|
| Model: Avery 64-05 | Comment: - AC 115 V power supply |
| Serial no.: --- | - Testmode: Mid Channel (0x18) |
| Applicant: EMV-Testhaus GmbH | - Note: With WHK/M3/13G-10SS high-pass-filter |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3 metres Vertical Polarization | |
| Date of test: 04/28/2005 — Operator: M. Steindl | |
| Test performed: automatically — File name: default.emi | |

| | |
|---|---|
| Detector: Peak | List of values: 10 dB Margin — 50 Subranges |

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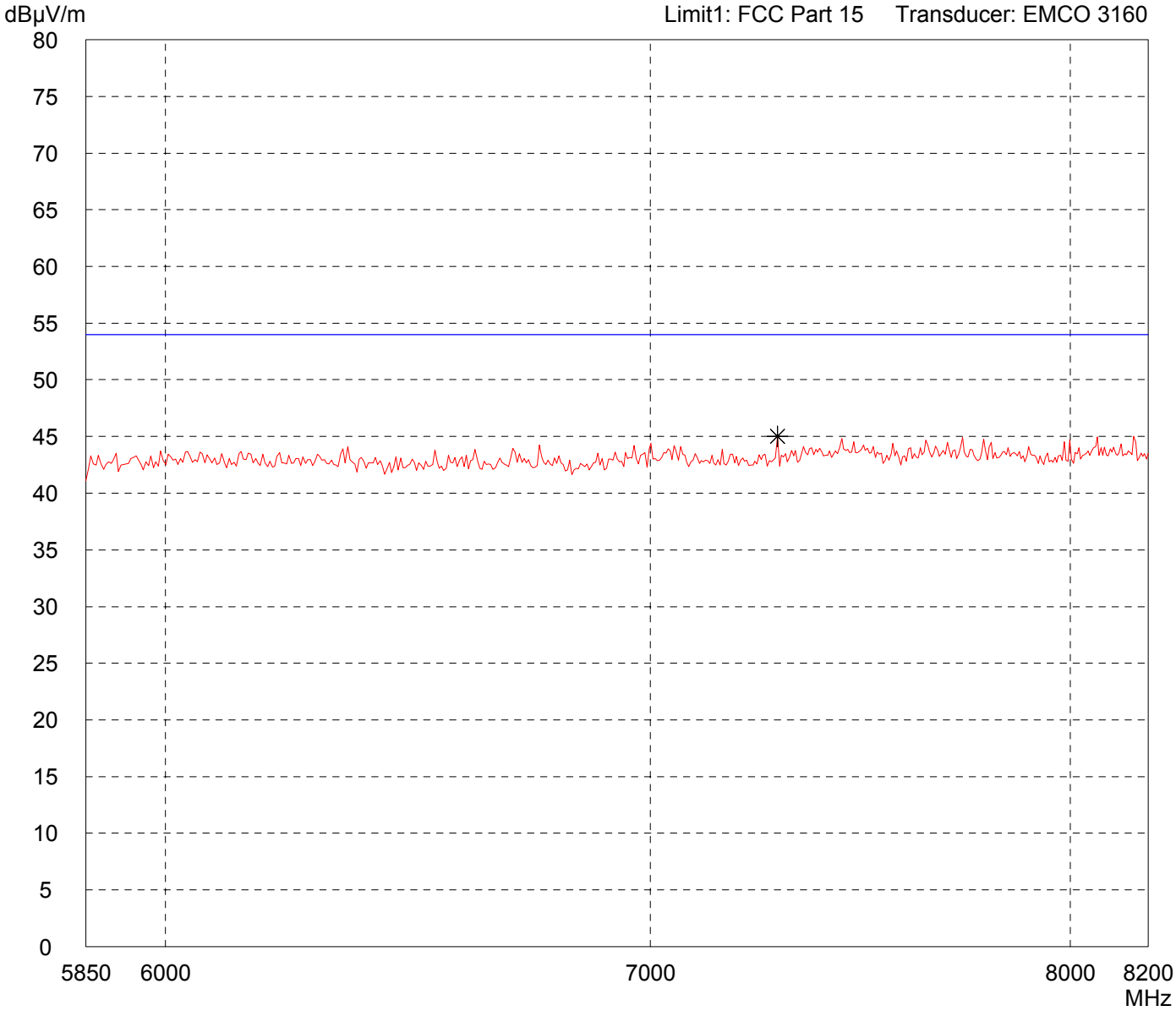
|---|---|
| Result: Prescan | Project file: 51323-50195 — Page of Pages |

# Radiated Emission Test 5.85 GHz - 8.2 GHz
# acc. to FCC Part 15 (EMCO 3160)

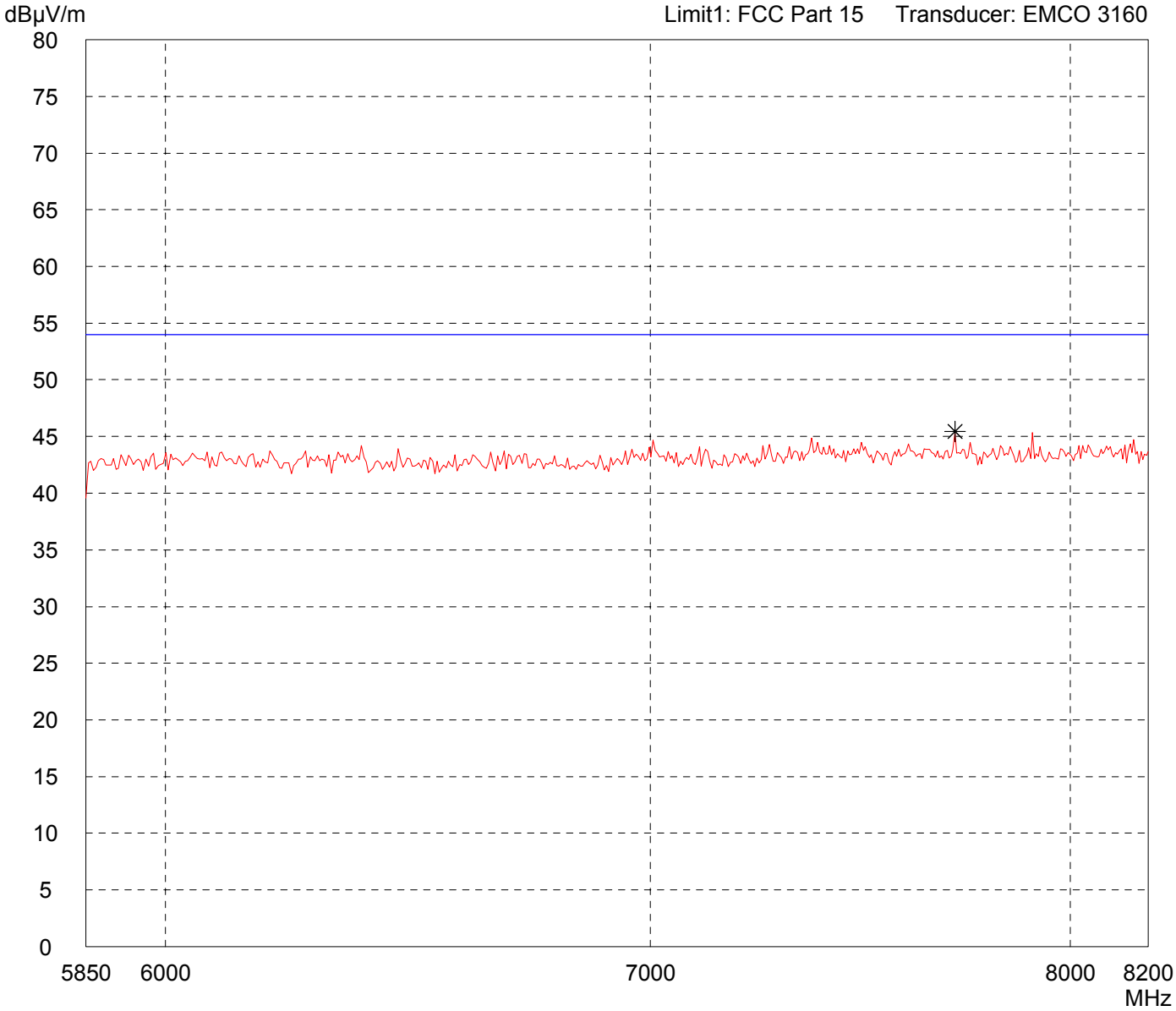
| | |
|---|---|
| Model: Avery 64-05 | Comment: - AC 115 V power supply |
| Serial no.: --- | - Testmode: Mid Channel (0x18) |
| Applicant: EMV-Testhaus GmbH | - Note: With WHK/M3/13G-10SS high-pass-filter |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3 metres Horizontal Polarization | |
| Date of test: 04/28/2005 — Operator: M. Steindl | |
| Test performed: automatically — File name: default.emi | |
| Detector: Peak | List of values: Selected by hand |




| | |
|---|---|
| Result: Prescan | Project file: 51323-50195 Page of Pages |

# Radiated Emission Test 5.85 GHz - 8.2 GHz
# acc. to FCC Part 15 (EMCO 3160)

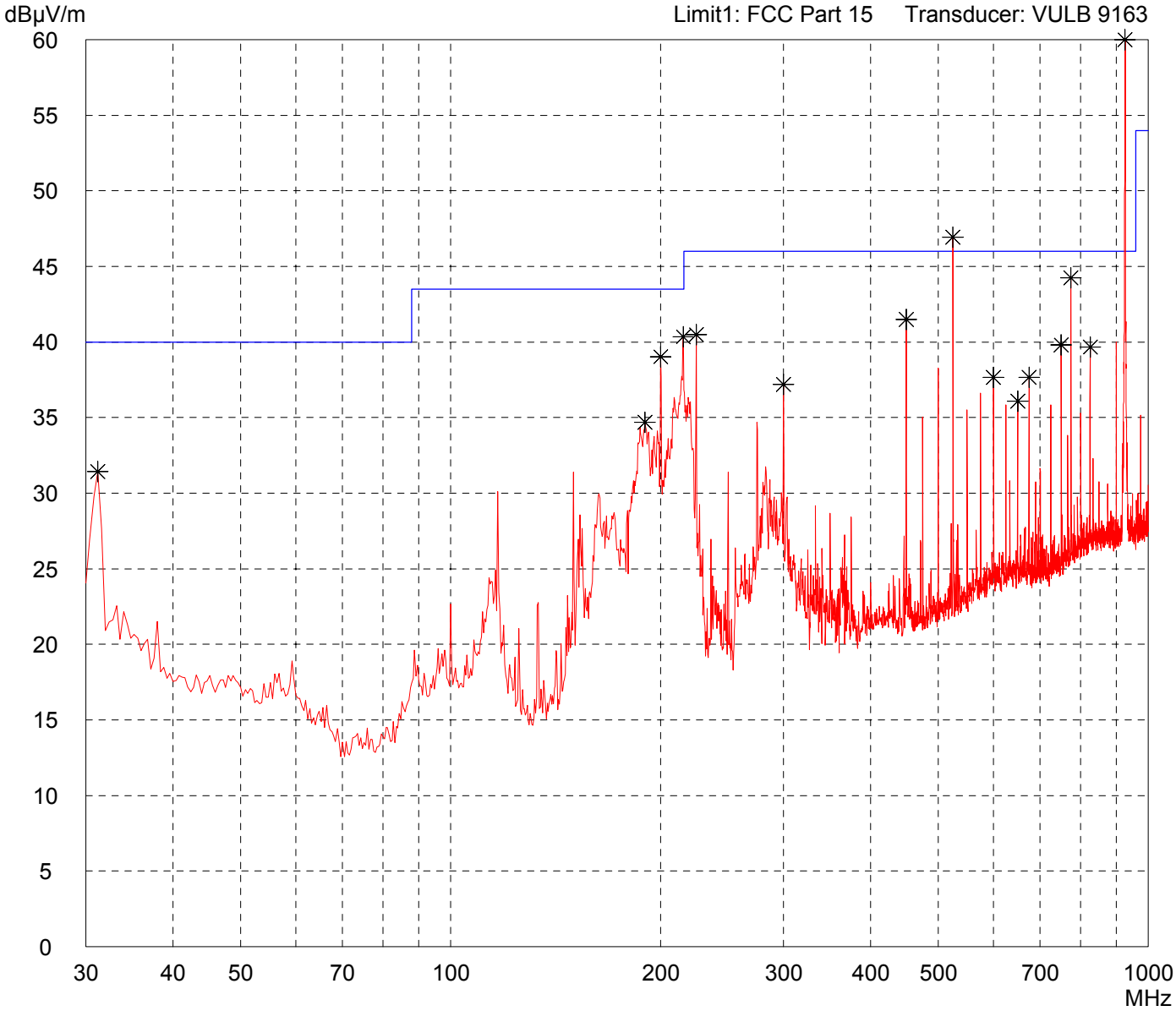
| | |
|---|---|
| Model: Avery 64-05 | Comment: - AC 115 V power supply |
| Serial no.: --- | - Testmode: Mid Channel (0x18) |
| Applicant: EMV-Testhaus GmbH | - Note: With WHK/M3/13G-10SS high-pass-filter |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3 metres<br>Vertical Polarization | |
| Date of test: 04/28/2005 — Operator: M. Steindl | |
| Test performed: automatically — File name: default.emi | |
| Detector: Peak | List of values: Selected by hand |




| | |
|---|---|
| Result: Prescan | Project file: 51323-50195 Page of Pages |

# Radiated Emission Test 30 MHz - 1 GHz
# acc. to FCC Part 15 (Fully Anechoic Chamber)

| | |
|---|---|
| Model: Avery 64-05 | Comment: - AC 115 V power supply<br>- Testmode: Lowest Channel (0x31) |
| Serial no.: --- | |
| Applicant: EMV-Testhaus GmbH | |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3 metres Horizontal Polarization | |
| Date of test: 04/28/2005 — Operator: M. Steindl | |
| Test performed: automatically — File name: default.emi | |
| Detector: Peak | List of values: Selected by hand |

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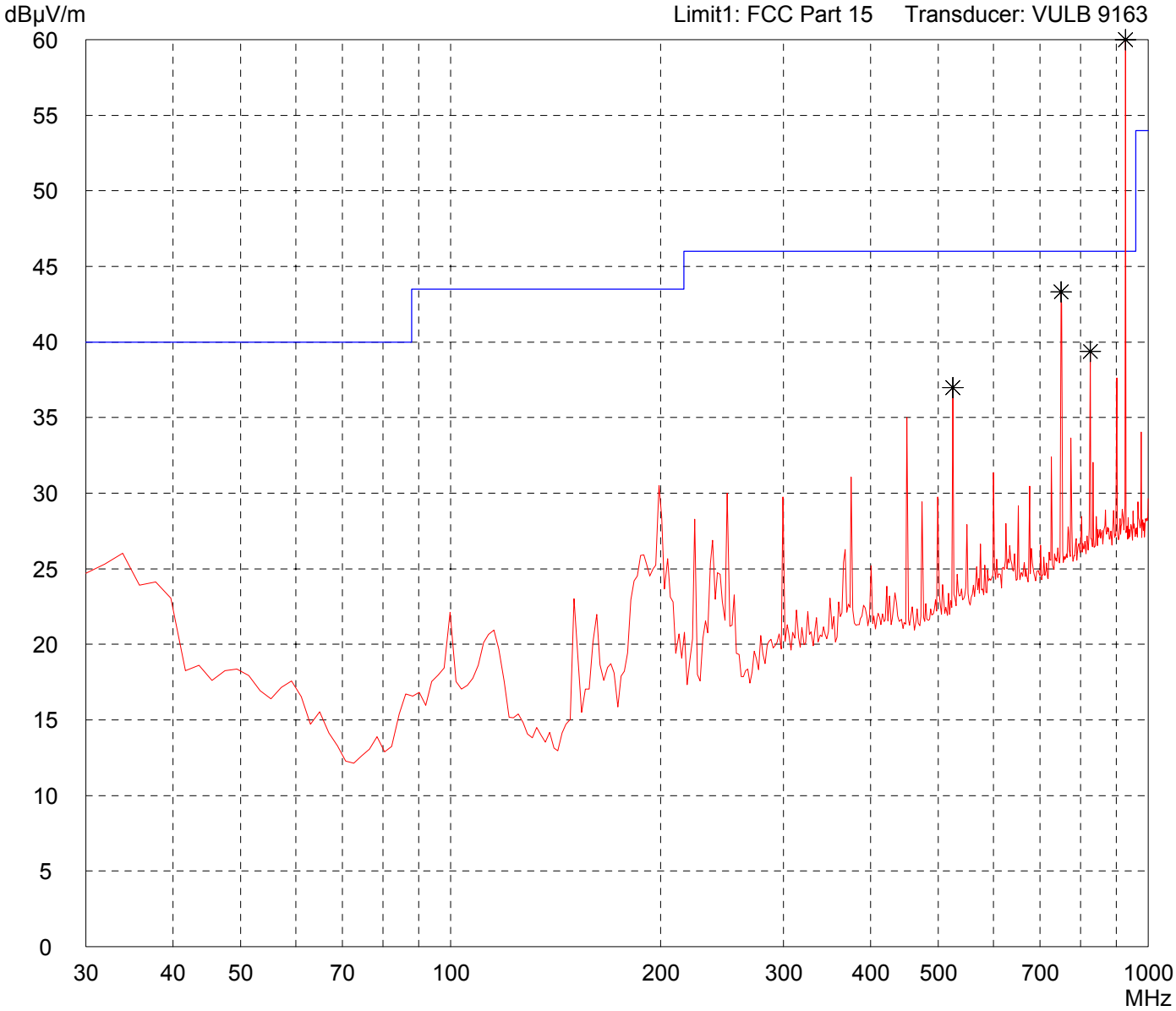
| Result: Prescan | Project file: 51323-50195 Page of Pages |

# Radiated Emission Test 30 MHz - 1 GHz
# acc. to FCC Part 15 (Fully Anechoic Chamber)

| | |
|---|---|
| Model: Avery 64-05 | Comment: - AC 115 V power supply<br>- Testmode: Lowest Channel (0x31) |
| Serial no.: --- | |
| Applicant: EMV-Testhaus GmbH | |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3 metres<br>Vertical Polarization | |
| Date of test: 04/28/2005 — Operator: M. Steindl | |
| Test performed: automatically — File name: default.emi | |

| | |
|---|---|
| Detector: Peak | List of values: 10 dB Margin — 50 Subranges |

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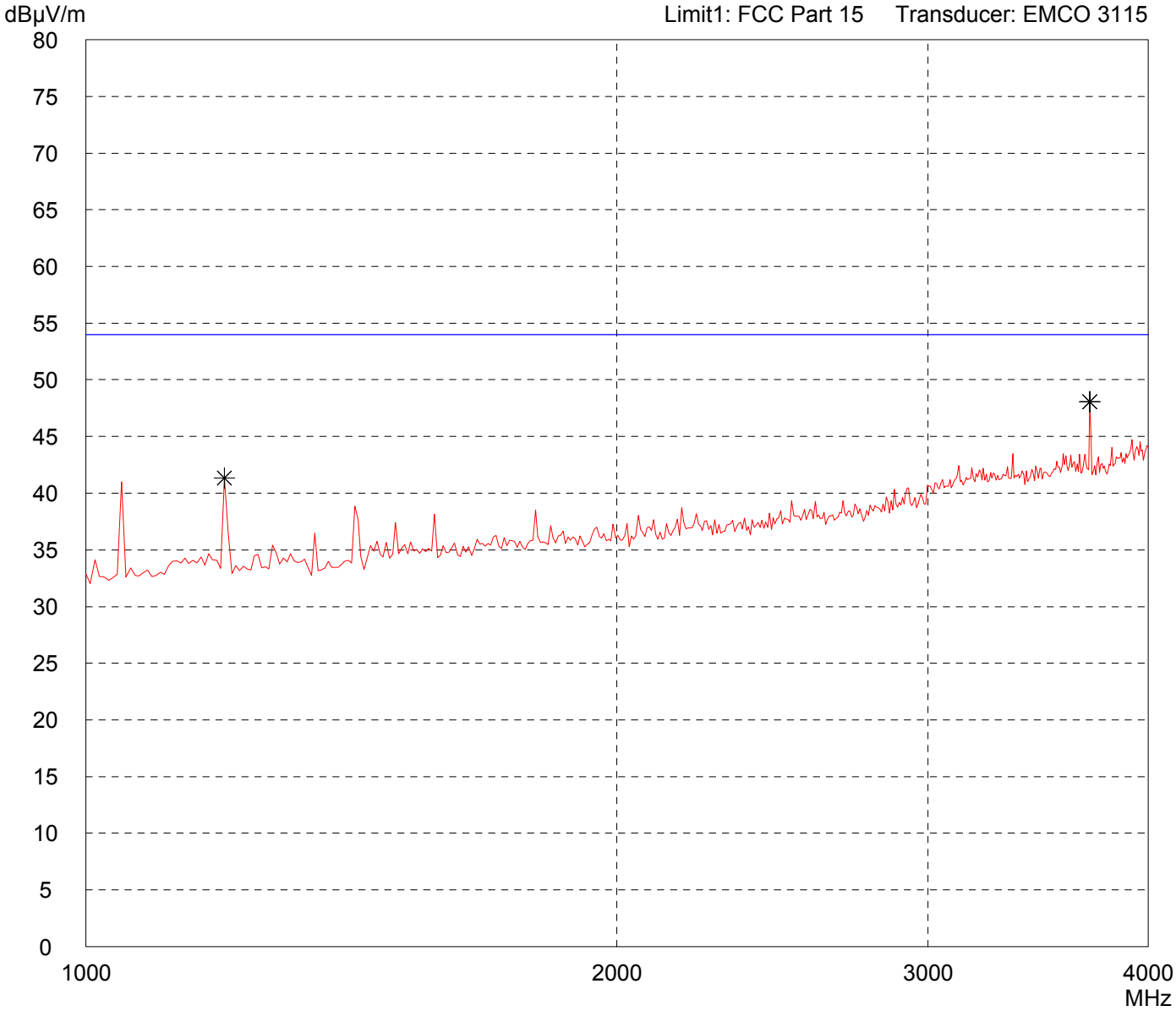
| Result: Prescan | Project file: 51323-50195 — Page of Pages |

# Radiated Emission Test 1 GHz - 4 GHz
# acc. to FCC Part 15 (EMCO 3115)

| | |
|---|---|
| Model: Avery 64-05 | Comment: - AC 115 V power supply |
| Serial no.: --- | - Testmode: Lowest Channel (0x31) |
| Applicant: EMV-Testhaus GmbH | - Note: With WHKS1000-10SS high-pass-filter |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3 metres Horizontal Polarization | |
| Date of test: 04/28/2005 — Operator: M. Steindl | |
| Test performed: automatically — File name: default.emi | |
| Detector: Peak | List of values: Selected by hand |

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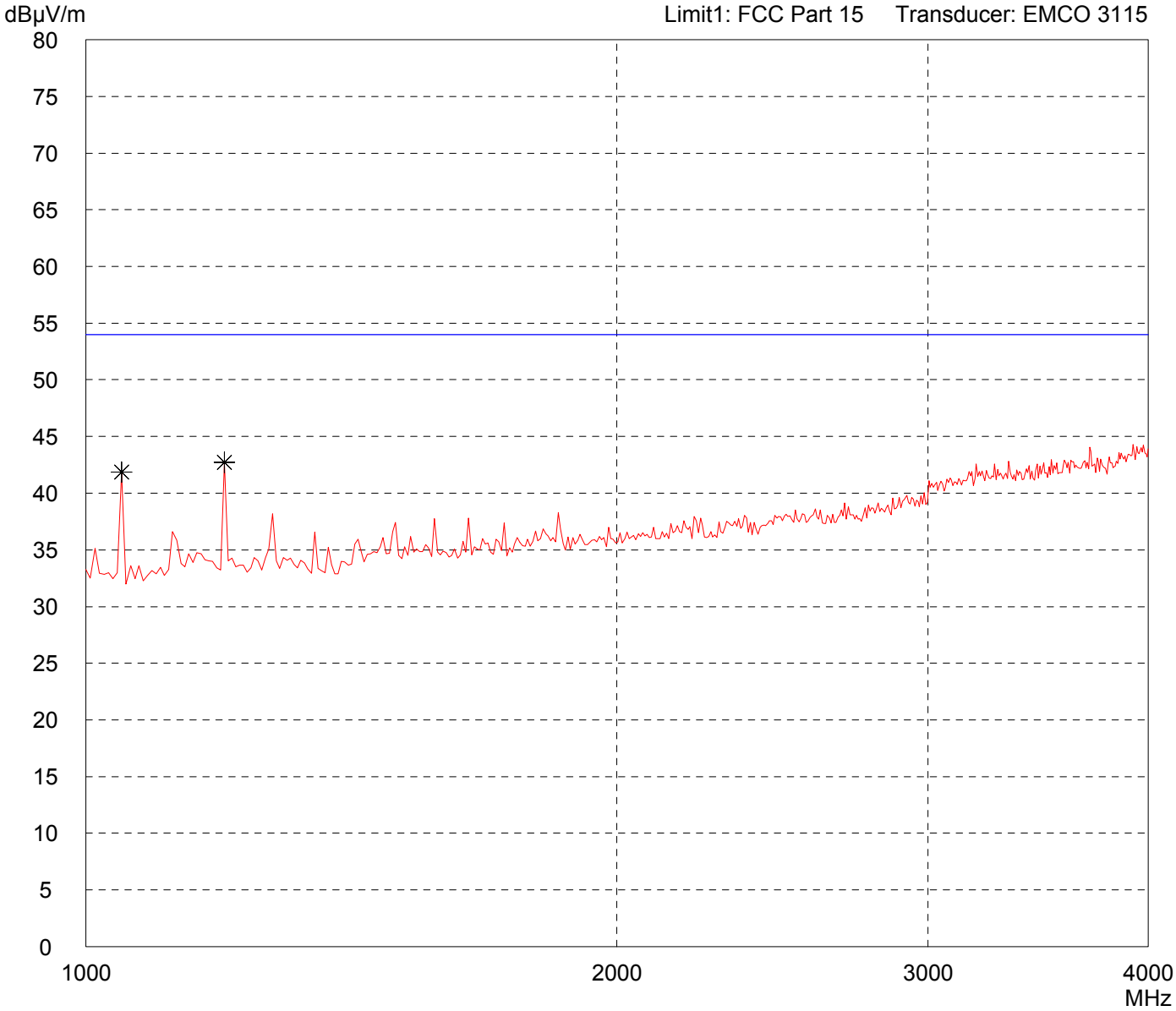
| Result: Prescan | Project file: 51323-50195 Page of Pages |

# Radiated Emission Test 1 GHz - 4 GHz
# acc. to FCC Part 15 (EMCO 3115)

| | |
|---|---|
| Model: Avery 64-05 | Comment: - AC 115 V power supply |
| Serial no.: --- | - Testmode: Lowest Channel (0x31) |
| Applicant: EMV-Testhaus GmbH | - Note: With WHKS1000-10SS high-pass-filter |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3 metres Vertical Polarization | |
| Date of test: 04/28/2005 — Operator: M. Steindl | |
| Test performed: automatically — File name: default.emi | |
| Detector: Peak | List of values: Selected by hand |

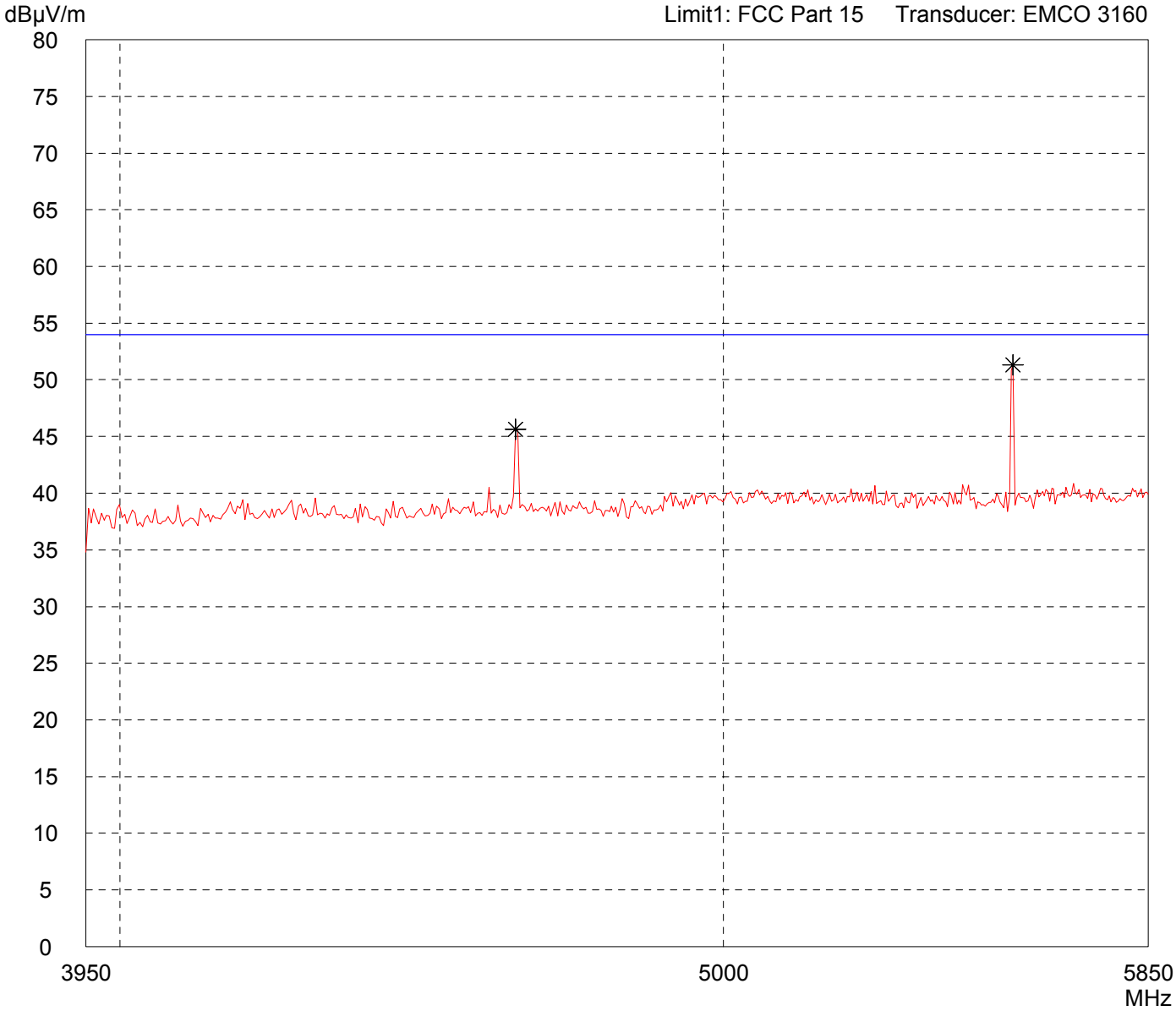



| | |
|---|---|
| Result: Prescan | Project file: 51323-50195 Page of Pages |

# Radiated Emission Test 3.95 GHz - 5.85 GHz
# acc. to FCC Part 15 (EMCO 3160)

| | |
|---|---|
| Model: Avery 64-05 | Comment: - AC 115 V power supply |
| Serial no.: --- | - Testmode: Lowest Channel (0x31) |
| Applicant: EMV-Testhaus GmbH | - Note: With WHK/M3/13G-10SS high-pass-filter |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3 metres Horizontal Polarization | |
| Date of test: 04/28/2005 — Operator: M. Steindl | |
| Test performed: automatically — File name: default.emi | |

| | |
|---|---|
| Detector: Peak | List of values: 10 dB Margin — 50 Subranges |

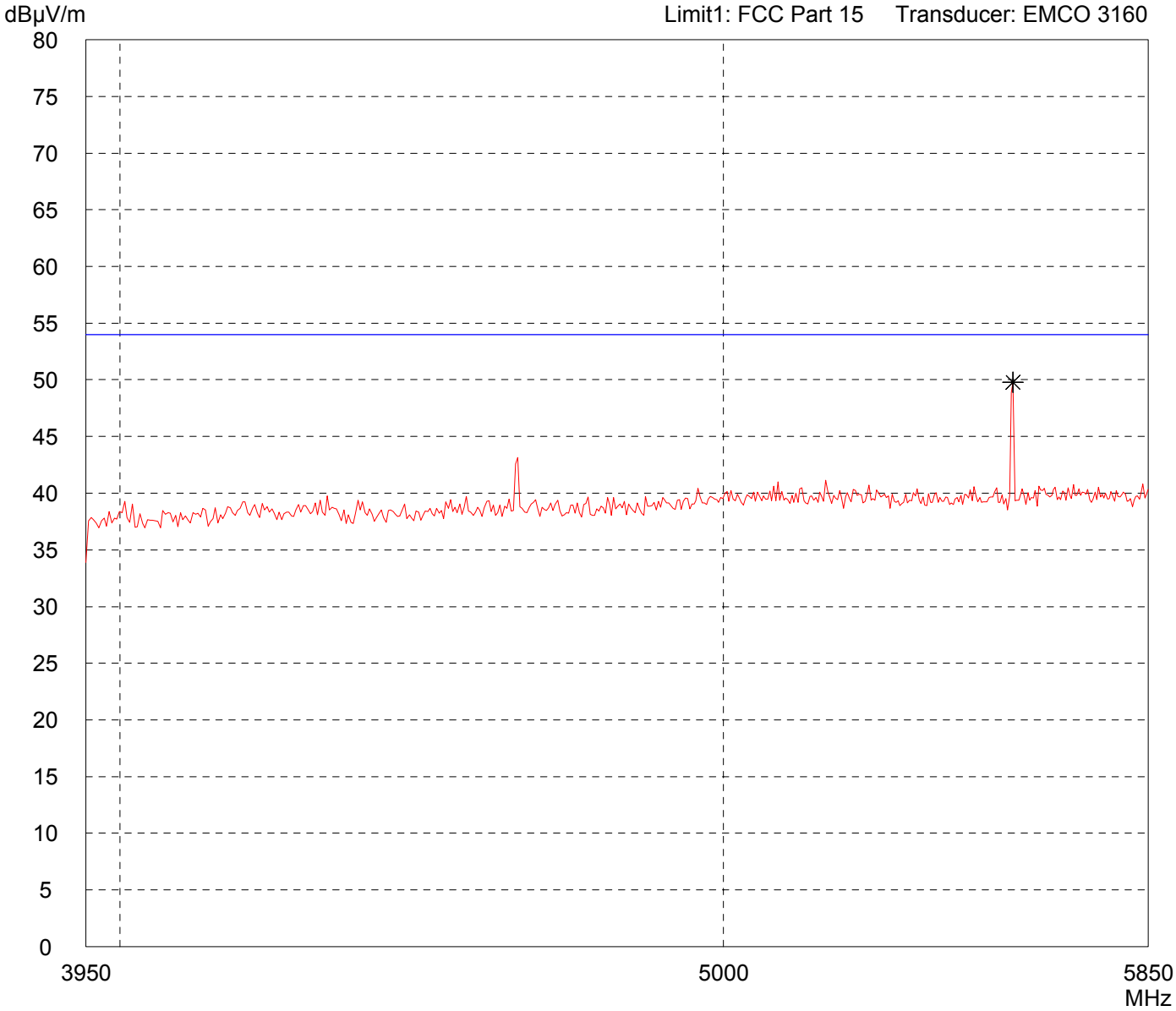



| | |
|---|---|
| Result: Prescan | Project file: 51323-50195 — Page of Pages |

# Radiated Emission Test 3.95 GHz - 5.85 GHz
# acc. to FCC Part 15 (EMCO 3160)

| | |
|---|---|
| Model: Avery 64-05 | Comment: - AC 115 V power supply |
| Serial no.: --- | - Testmode: Lowest Channel (0x31) |
| Applicant: EMV-Testhaus GmbH | - Note: With WHK/M3/13G-10SS high-pass-filter |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3 metres<br>Vertical Polarization | |
| Date of test: 04/28/2005 — Operator: M. Steindl | |
| Test performed: automatically — File name: default.emi | |

| | |
|---|---|
| Detector: Peak | List of values: 10 dB Margin — 50 Subranges |

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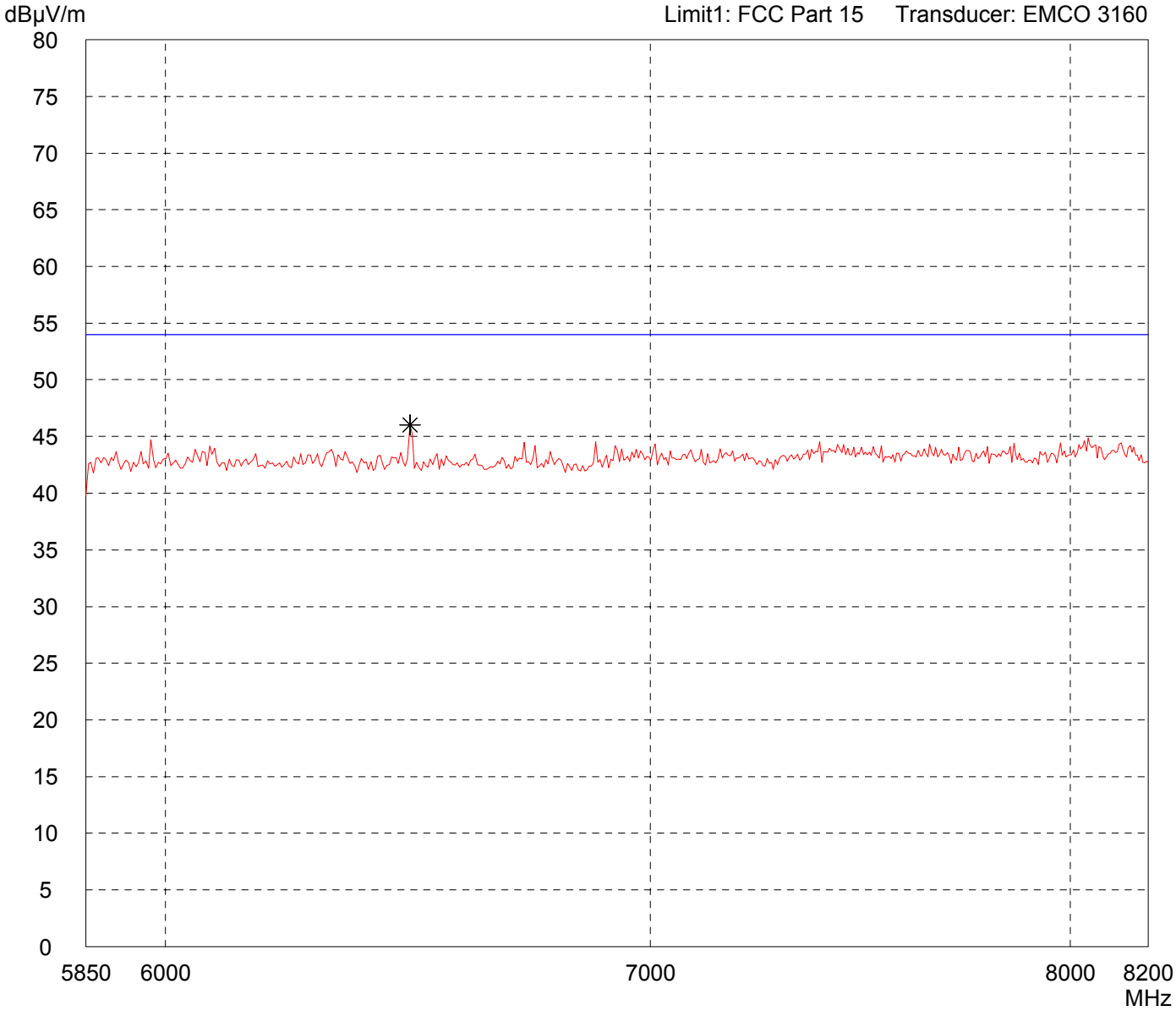
|---|---|
| Result: Prescan | Project file: 51323-50195 — Page of Pages |

# Radiated Emission Test 5.85 GHz - 8.2 GHz
# acc. to FCC Part 15 (EMCO 3160)

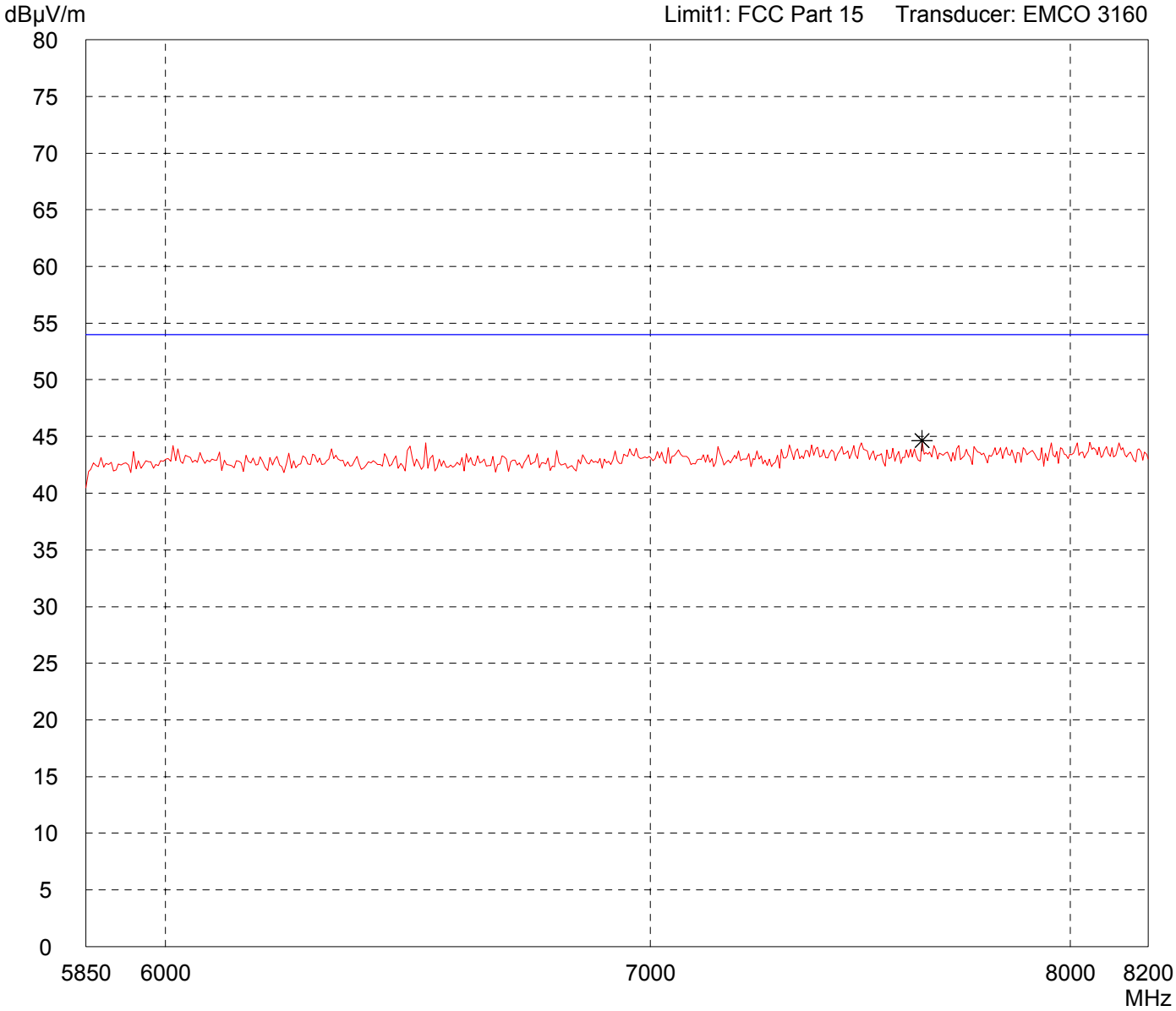
| | |
|---|---|
| Model: Avery 64-05 | Comment: - AC 115 V power supply |
| Serial no.: --- | - Testmode: Lowest Channel (0x31) |
| Applicant: EMV-Testhaus GmbH | - Note: With WHK/M3/13G-10SS high-pass-filter |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3 metres Horizontal Polarization | |
| Date of test: 04/28/2005 — Operator: M. Steindl | |
| Test performed: automatically — File name: default.emi | |
| Detector: Peak | List of values: Selected by hand |




| | |
|---|---|
| Result: Prescan | Project file: 51323-50195 Page of Pages |

# Radiated Emission Test 5.85 GHz - 8.2 GHz
# acc. to FCC Part 15 (EMCO 3160)

| | |
|---|---|
| Model: Avery 64-05 | Comment: |
| Serial no.: --- | - AC 115 V power supply |
| Applicant: EMV-Testhaus GmbH | - Testmode: Lowest Channel (0x31) |
| Test site: Fully anechoic room, cabin no. 2 | - Note: With WHK/M3/13G-10SS high-pass-filter |
| Tested on: Test distance 3 metres Vertical Polarization | |
| Date of test: 04/28/2005 — Operator: M. Steindl | |
| Test performed: automatically — File name: default.emi | |
| Detector: Peak | List of values: Selected by hand |

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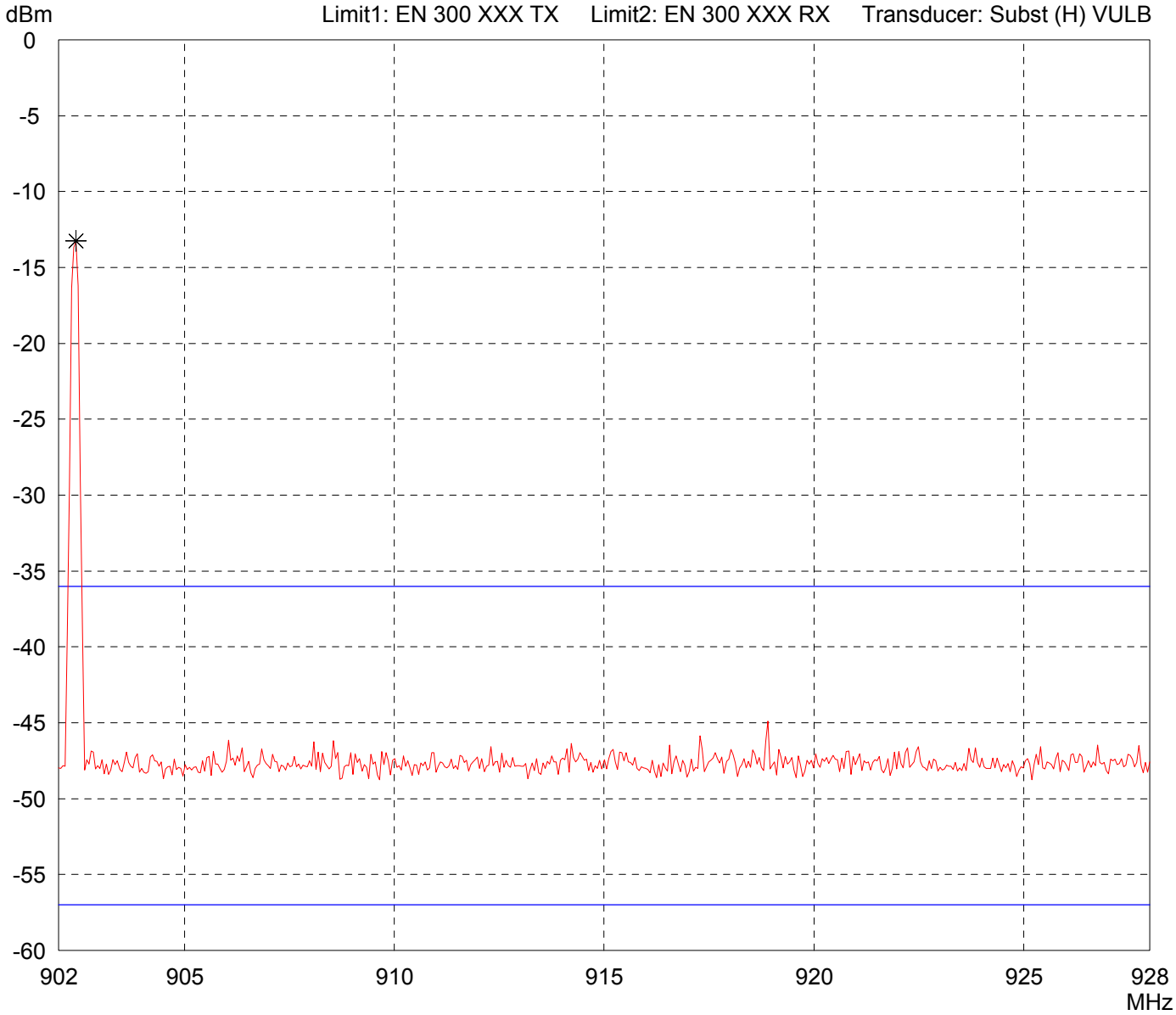
|---|---|
| Result: Prescan | Project file: 51323-50195 Page of Pages |

# Radiated Power Test 902 MHz - 928 MHz
# acc. to EN 300 220-1 (VULB9163)

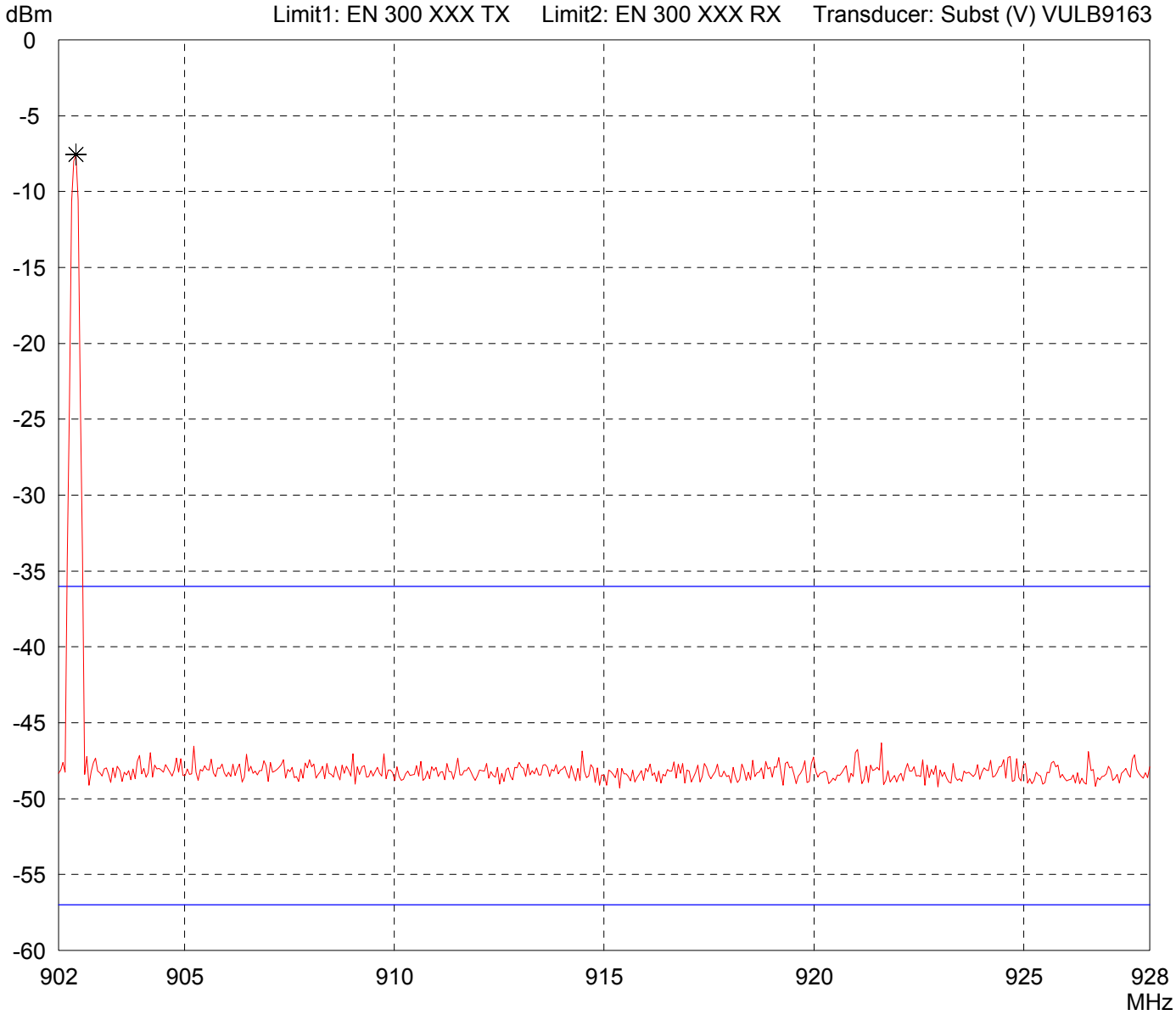
| | |
|---|---|
| Model: Avery 64-05 | Comment: - AC 115 V power supply<br>- Testmode: Lowest Channel (0x00) |
| Serial no.: --- | |
| Applicant: EMV-Testhaus GmbH | |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3.5 metres<br>Horizontal Polarization | |
| Date of test: 05/04/2005 — Operator: M. Steindl | |
| Test performed: automatically — File name: default.emi | |
| Detector: Peak | List of values: Selected by hand |




| | |
|---|---|
| Result: | Project file: 51323-50195 Page of Pages |

# Radiated Power Test 902 MHz - 928 MHz
# acc. to EN 300 220-1 (VULB9163)

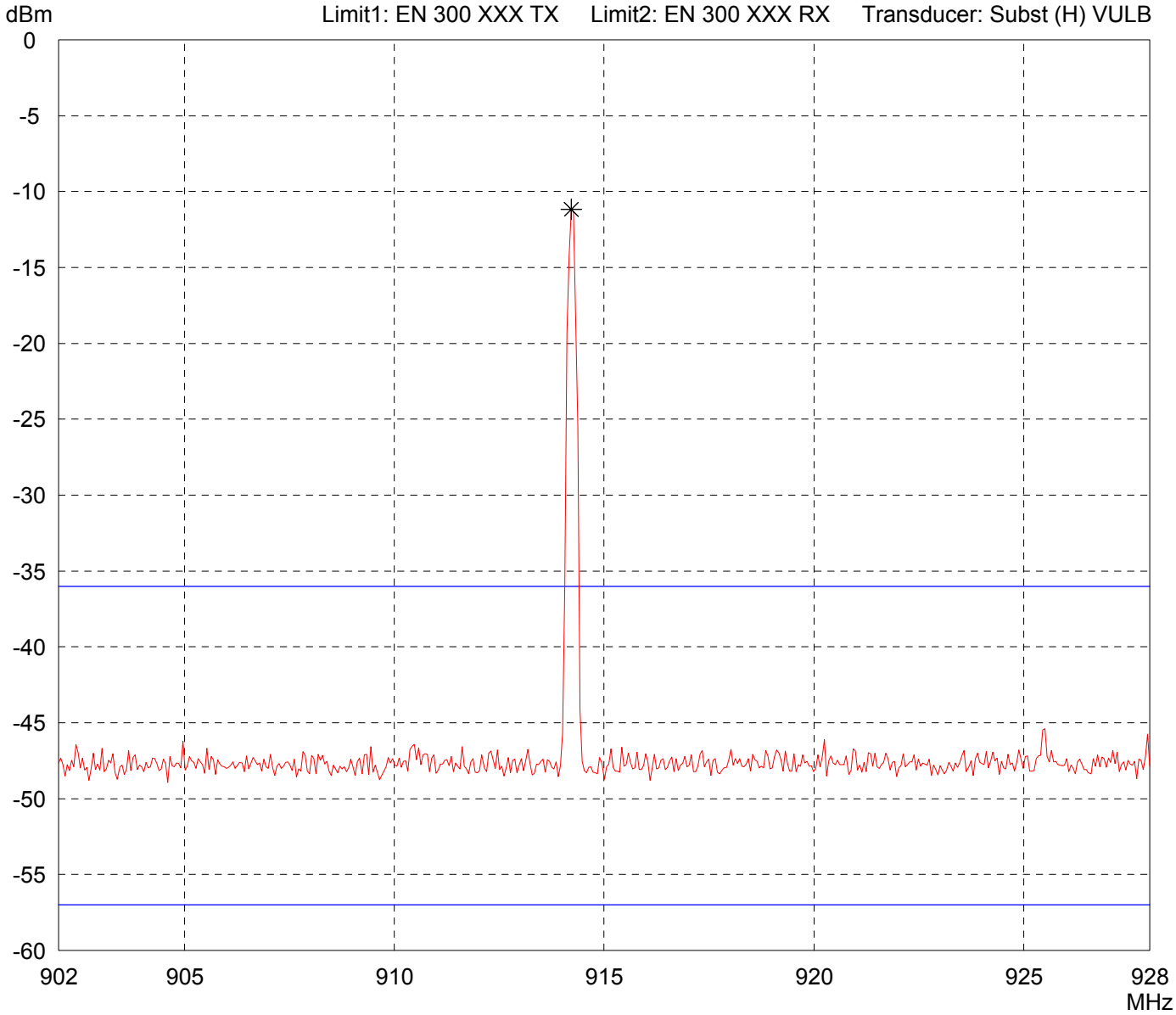
| | |
|---|---|
| Model: Avery 64-05 | Comment: - AC 115 V power supply<br>- Testmode: Lowest Channel (0x00) |
| Serial no.: --- | |
| Applicant: EMV-Testhaus GmbH | |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3.5 metres<br>Vertical Polarization | |
| Date of test: 05/04/2005 — Operator: M. Steindl | |
| Test performed: automatically — File name: default.emi | |
| Detector: Peak | List of values: Selected by hand |




| | |
|---|---|
| Result: | Project file: 51323-50195 Page of Pages |

# Radiated Power Test 902 MHz - 928 MHz
# acc. to EN 300 220-1 (VULB9163)

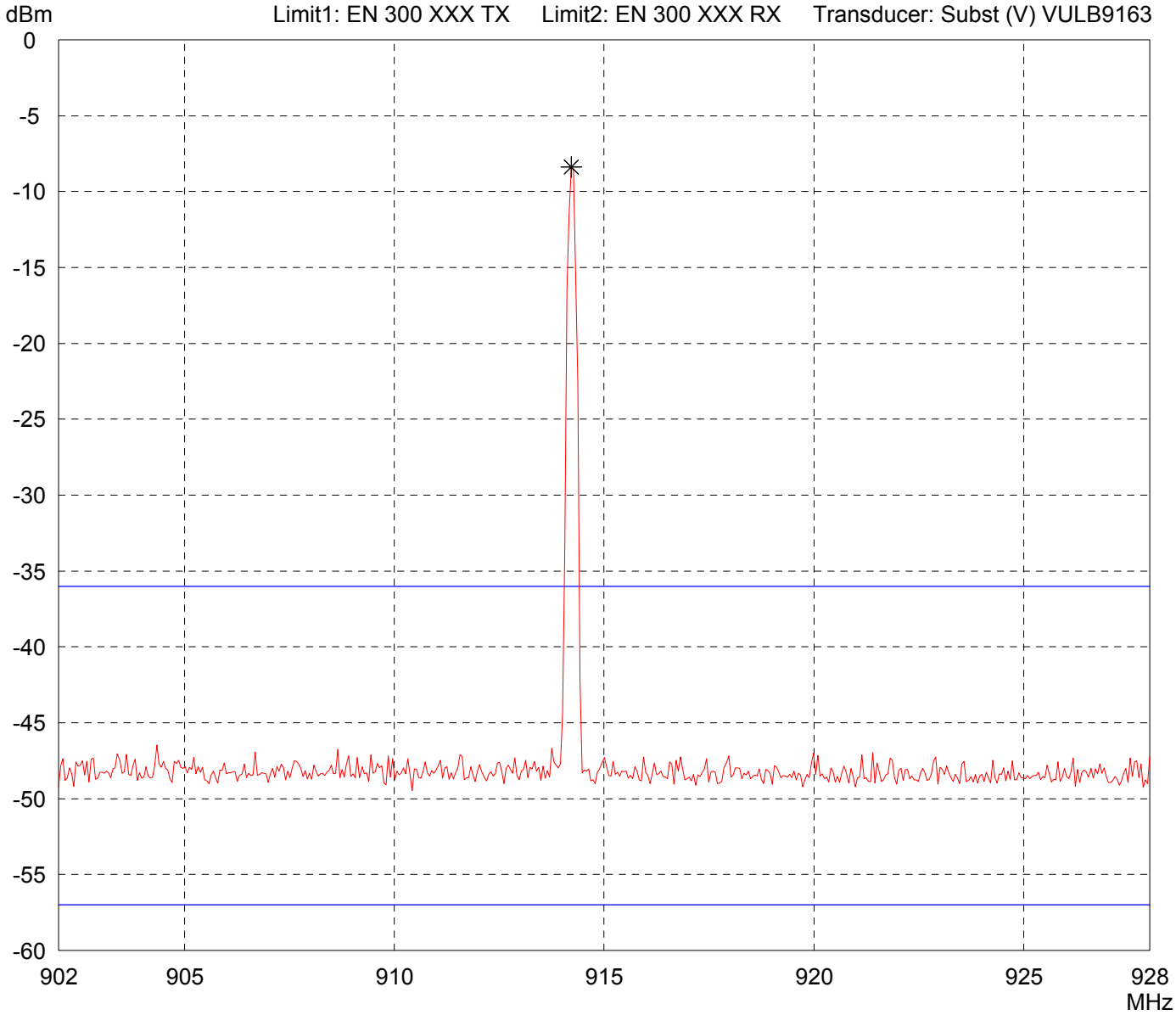
| | |
|---|---|
| Model: Avery 64-05 | Comment: - AC 115 V power supply<br>- Testmode: Mid Channel (0x18) |
| Serial no.: --- | |
| Applicant: EMV-Testhaus GmbH | |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3.5 metres<br>Horizontal Polarization | |
| Date of test: 05/04/2005 — Operator: M. Steindl | |
| Test performed: automatically — File name: default.emi | |
| Detector: Peak | List of values: Selected by hand |




| | |
|---|---|
| Result: | Project file: 51323-50195 Page of Pages |

# Radiated Power Test 902 MHz - 928 MHz
# acc. to EN 300 220-1 (VULB9163)

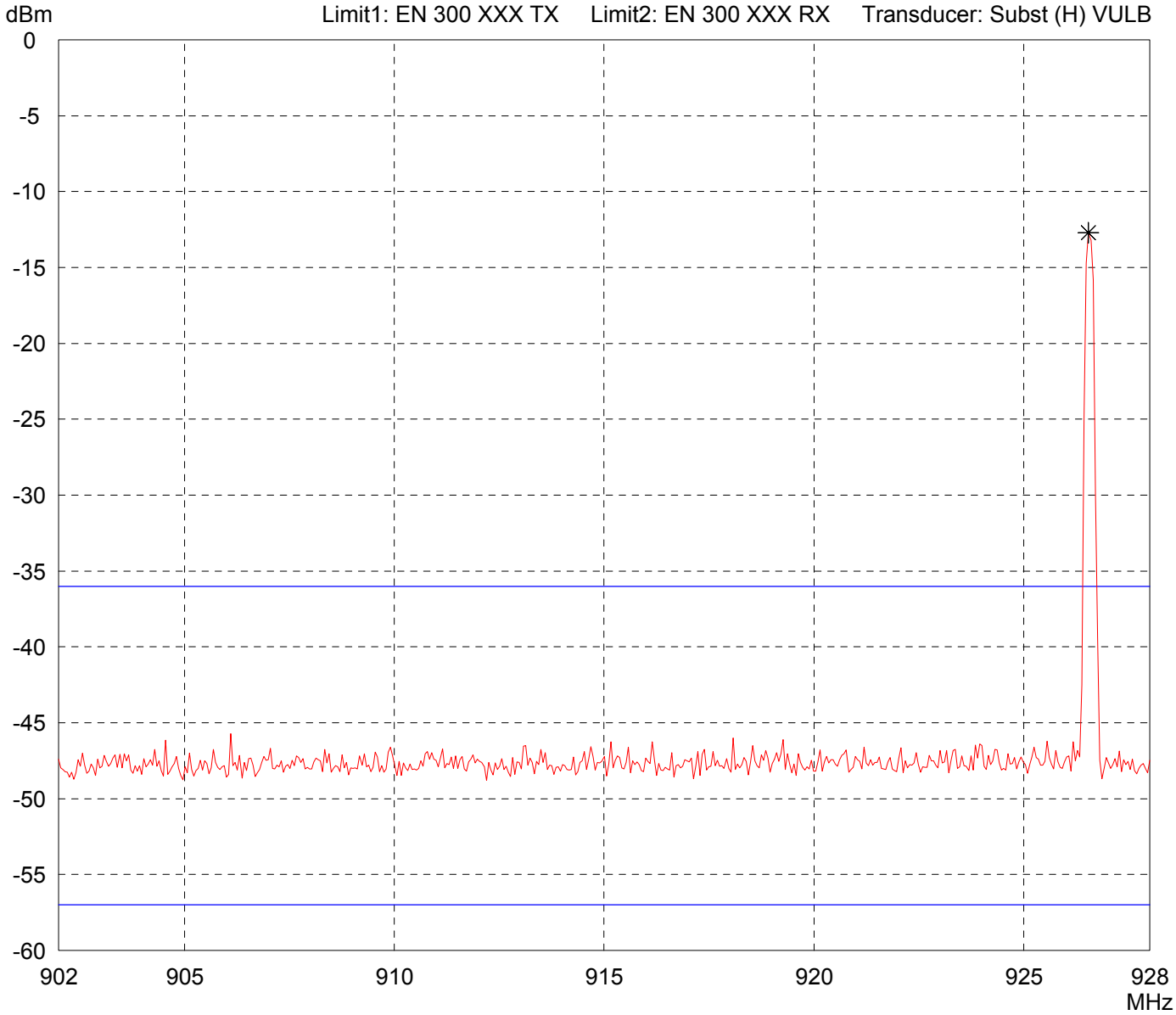
| | |
|---|---|
| Model: Avery 64-05 | Comment: - AC 115 V power supply<br>- Testmode: Mid Channel (0x18) |
| Serial no.: --- | |
| Applicant: EMV-Testhaus GmbH | |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3.5 metres<br>Vertical Polarization | |
| Date of test: 05/04/2005 — Operator: M. Steindl | |
| Test performed: automatically — File name: default.emi | |
| Detector: Peak | List of values: Selected by hand |




| | |
|---|---|
| Result: | Project file: 51323-50195 Page of Pages |

# Radiated Power Test 902 MHz - 928 MHz
# acc. to EN 300 220-1 (VULB9163)

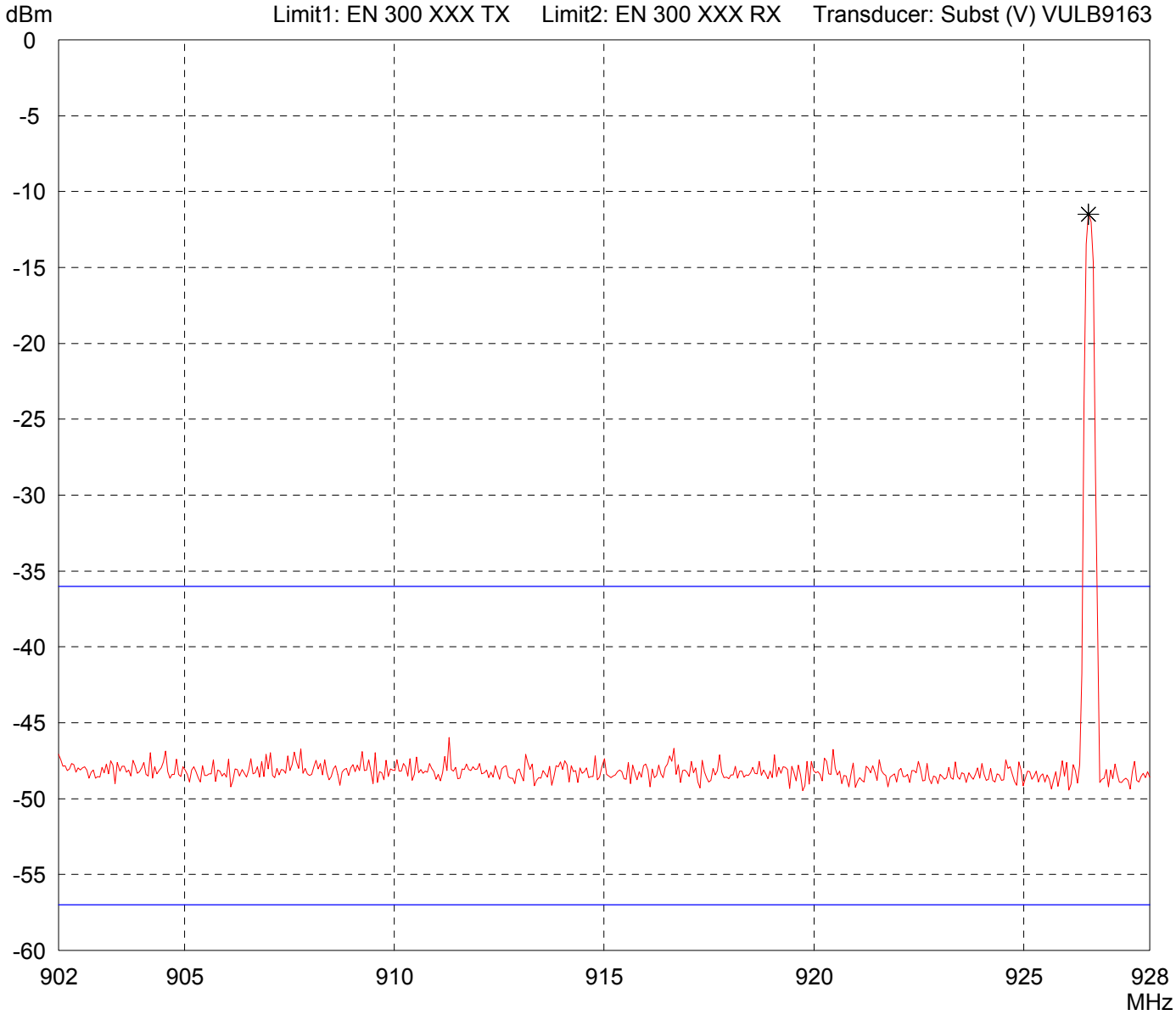
| | |
|---|---|
| Model: Avery 64-05 | Comment: - AC 115 V power supply<br>- Testmode: Highest Channel (0x31) |
| Serial no.: --- | |
| Applicant: EMV-Testhaus GmbH | |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3.5 metres<br>Horizontal Polarization | |
| Date of test: 05/04/2005 — Operator: M. Steindl | |
| Test performed: automatically — File name: default.emi | |
| Detector: Peak | List of values: Selected by hand |




| | |
|---|---|
| Result: | Project file: 51323-50195 Page of Pages |

# Radiated Power Test 902 MHz - 928 MHz
# acc. to EN 300 220-1 (VULB9163)

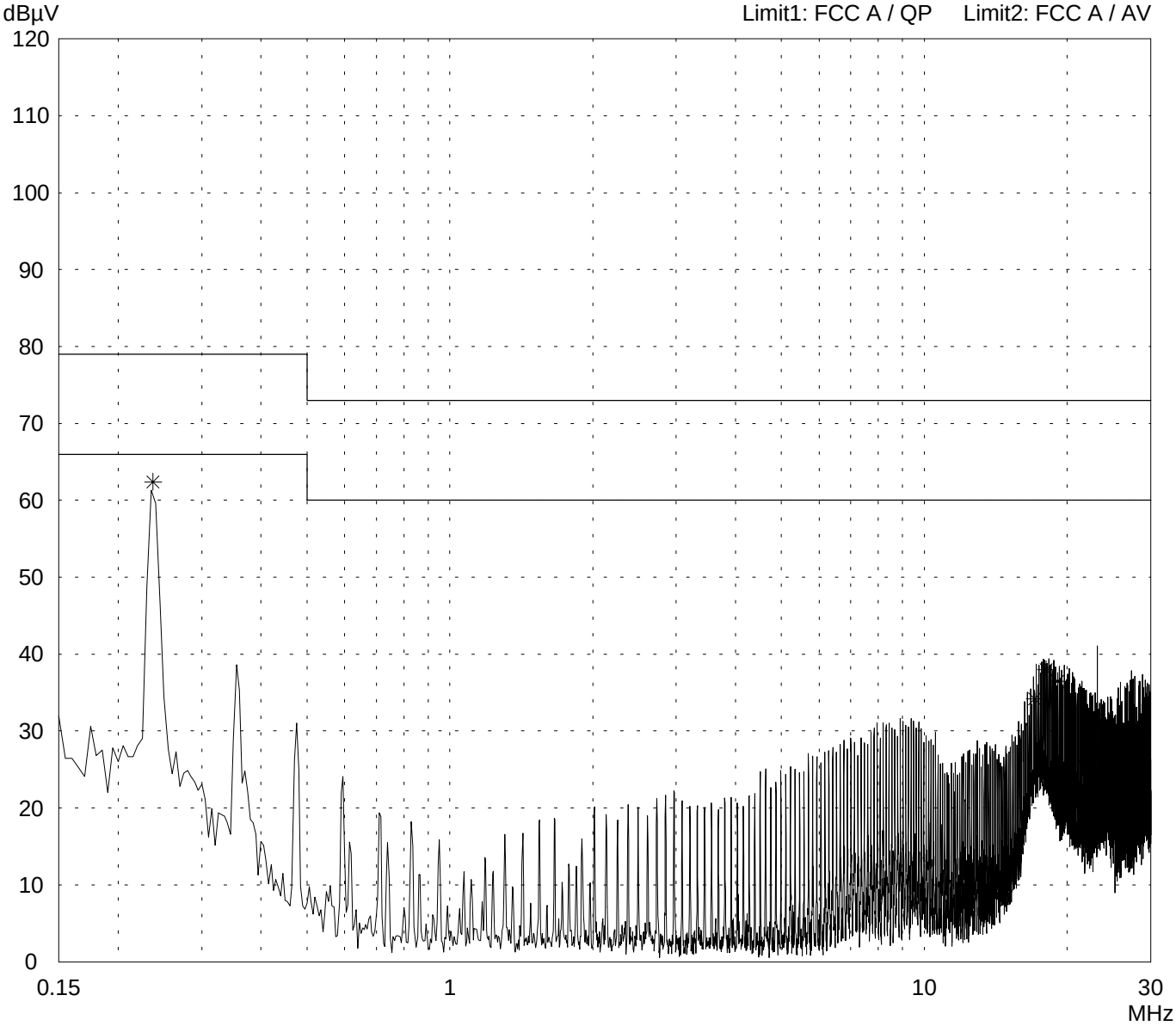
| | |
|---|---|
| Model: Avery 64-05 | Comment: - AC 115 V power supply<br>- Testmode: Highest Channel (0x31) |
| Serial no.: --- | |
| Applicant: EMV-Testhaus GmbH | |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3.5 metres<br>Vertical Polarization | |
| Date of test: 05/04/2005 — Operator: M. Steindl | |
| Test performed: automatically — File name: default.emi | |
| Detector: Peak | List of values: Selected by hand |




| | |
|---|---|
| Result: | Project file: 51323-50195 Page of Pages |

# Conducted Emission Test 150 kHz - 30 MHz
# according to FCC Part 15 Subpart B Class A

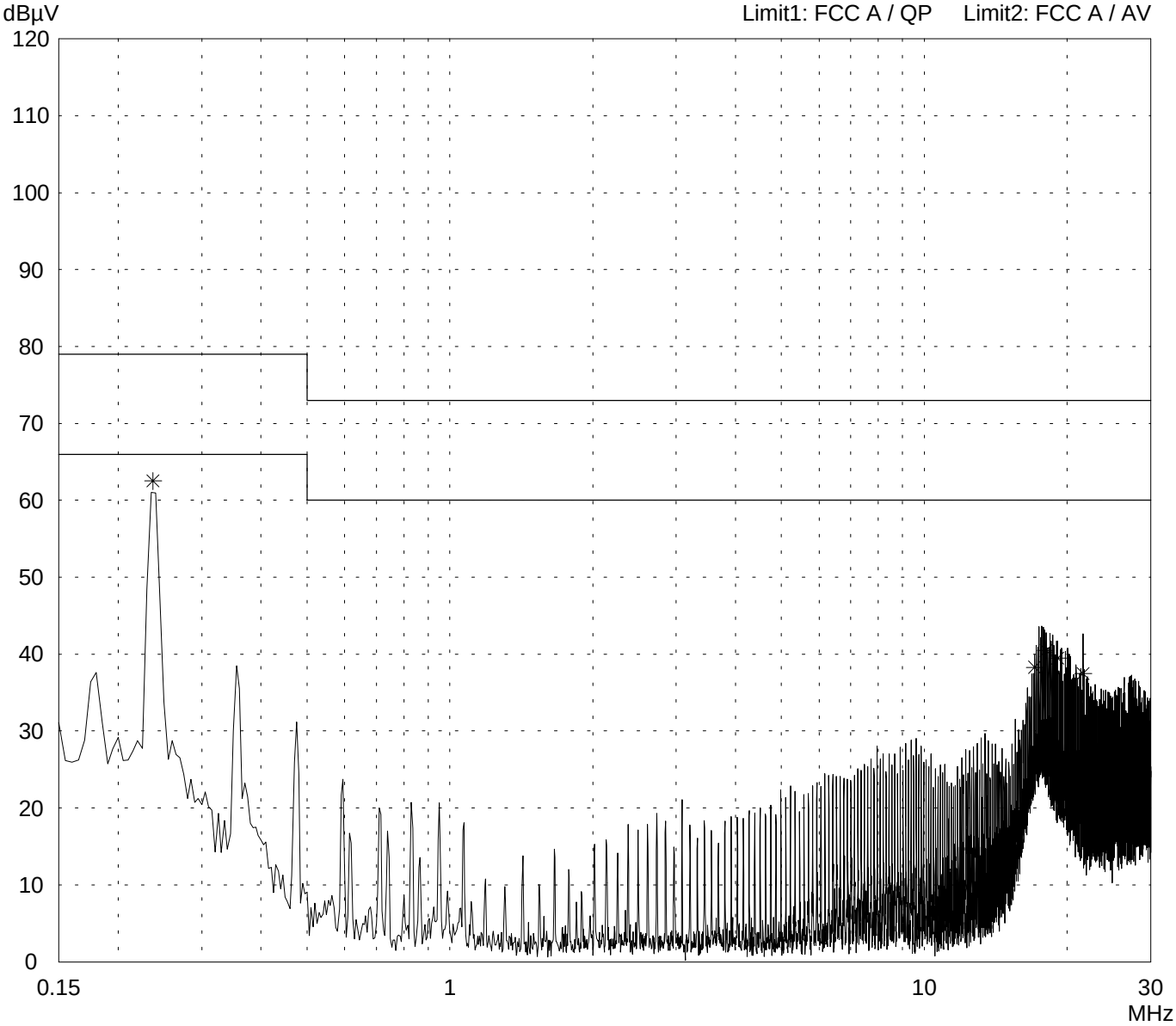
| | |
|---|---|
| Model: Avery 64-05 | Mode: - AC 115 V power supply<br>- Testmode: Hopping |
| Serial no.: | |
| Applicant: EMV-Testhaus GmbH | |
| Test site: Shielded room, cabin no. 1 | |
| Tested on: Linecord<br>Phase L1 | |
| Date of test: 05/02/2005 — Operator: M. Steindl | |
| Test performed: semi automatically — File name: | |
| Detector: Peak / Final Results: QP | Final results: Selected by hand |




| | |
|---|---|
| Result: Limit kept | Project file: 50531-50145 Page of Pages |

# Conducted Emission Test 150 kHz - 30 MHz
# according to FCC Part 15 Subpart B Class A

| | |
|---|---|
| Model: Avery 64-05 | Mode: - AC 115 V power supply<br>- Testmode: Hopping |
| Serial no.: | |
| Applicant: EMV-Testhaus GmbH | |
| Test site: Shielded room, cabin no. 1 | |
| Tested on: Linecord<br>Phase N | |
| Date of test: 05/02/2005 — Operator: M. Steindl | |
| Test performed: semi automatically — File name: | |
| Detector: Peak / Final Results: QP | Final results: Selected by hand |




| | |
|---|---|
| Result: Limit kept | Project file: 50531-50145 Page of Pages |