

Straubing, 18 October 2005

T E S T - R E P O R T

No. 50104-050463 (Edition 2)

for

Model 1500

Audio Transmitter & Receiver

Applicant: Amphony (Deutschland) GmbH

Test Specifications: FCC Code of Federal Regulations,
CFR 47, Part 15,
Sections 15.107, 15.109, 15.205, 15.207,
15.215 and 15.249

Note:

The test data of this report is related 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 Description of the Equipment Under Test (EUT)

| General data of EUT | |
|---------------------------------|--|
| Type designation ¹ : | Model 1500 |
| Parts ² : | |
| Serial number(s): | Prototype |
| Manufacturer: | Amphony (Deutschland) GmbH |
| Type of equipment: | Audio Transmitter & Receiver |
| Version: | |
| FCC ID: | N/A |
| Additional parts/accessories: | AC Adaptors for Transmitter & Receiver |

| Technical data of EUT | |
|---|--|
| Application frequency range: | 5725 – 5875 MHz |
| Frequency range: | |
| Operating frequency: | 5800 MHz |
| Type of modulation: | FM |
| Pulse train: | |
| Pulse width: | |
| Number of RF-channels: | 1 |
| Channel spacing: | N.A. |
| Designation of emissions ³ : | 20M0F3D |
| Type of antenna: | Integrated |
| Size/length of antenna: | N/A |
| Connection of antenna: | <input type="checkbox"/> detachable <input checked="" type="checkbox"/> not detachable |
| Type of power supply: | AC supply |
| Specifications for power supply: | nominal voltage: 115 V minimum voltage: N/A V maximum voltage: N/A V nominal frequency: 60 Hz |

¹ Type designation of the system if EUT consists of more than one part.

² Type designations of the parts of the system, if applicable.

³ Also known as "Class of Emission".

2 Administrative Data

| Application details | |
|----------------------------|---|
| Applicant (full address): | Amphony (Deutschland) GmbH Annenstraße 26 D- 10179 Berlin |
| Contact person: | Jens Kurrat |
| Contract identification: | --- |
| Receipt of EUT: | 29 July 2005 |
| Date(s) of test: | August to October 2005 |
| Note(s): | |

| Report details | |
|-----------------------|-----------------|
| Report number: | 50104-050463 |
| Edition: | 2 |
| Issue date: | 18 October 2005 |

3 Identification of the Test Laboratory

| Details of the Test Laboratory | |
|---|--|
| Company name: | Senton GmbH EMI/EMC Test Center |
| Address: | Aeussere Fruehlingstrasse 45 D-94315 Straubing Germany |
| Laboratory accreditation: | DAR-Registration No. DAT-P-171/94-02 |
| FCC test site registration number | 90926 |
| Industry Canada test site registration: | IC 3050 |
| Contact person: | Mr. Johann Roidt |
| | Phone: (+49) (0)9421 5522-0 Fax: (+49) (0)9421 5522-99 |

4 Summary

Summary of test results

The tested sample complies with the requirements set forth in the

**Code of Federal Regulations CFR 47, Part 15, Sections 15.107, 15.109, 15.205, 15.207, 15.215 and
15.249**

of the Federal Communication Commission (FCC).

Personnel involved in this report

Laboratory Manager:



Mr. Johann Roidt

Responsible for testing:

Mr. Johann Roidt

Responsible for test report:

Mr. Johann Roidt

5 Operation Mode and Configuration of EUT

Operation Mode(s)

Audio signal 100 mV / 1 kHz at Transmitter input

Configuration(s) of EUT

Stand alone

List of ports and cables

| Port | Description | Classification ⁴ | Cable type | Cable length |
|------|---------------------------------|-----------------------------|------------|--------------|
| 1 | AC power input (via AC adaptor) | ac power | Unshielded | N/A |
| 2 | Audio input | signal/control port | Shielded | N/A |
| 3 | Audio output | signal/control port | Shielded | |

List of devices connected to EUT

| Item | Description | Type Designation | Serial no. or ID | Manufacturer |
|------|----------------|------------------|------------------|--------------|
| 1 | Not applicable | | | |

List of support devices

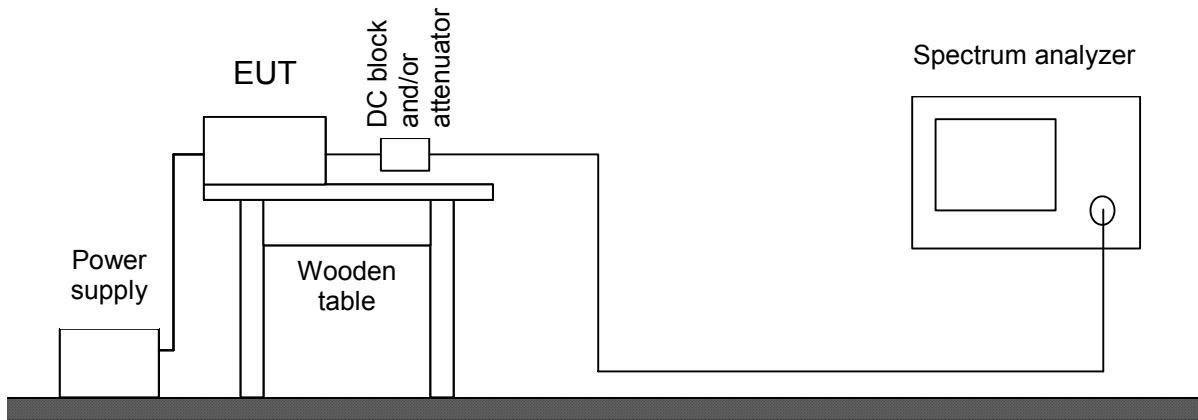
| Item | Description | Type Designation | Serial no. or ID | Manufacturer |
|------|-----------------|------------------|------------------|--------------|
| 1 | Audio generator | | | |

⁴ Ports shall be classified as ac power, dc power or signal/control port

6 Measurement Procedures

6.1 Bandwidth Measurements

| Measurement Procedure: | |
|--|---|
| Rules and specifications: | CFR 47 Part 2, section 2.202(a) CFR 47 Part 15, section 15.215(c) ANSI C63.4, annex H.6 |
| Guide: | ANSI C63.4 |
| Measurement setup: | <input type="checkbox"/> Conducted: See below <input checked="" type="checkbox"/> Radiated: Radiated Emission in Fully or Semi Anechoic Room (6.3) |
| <p>If antenna is detachable bandwidth measurements shall be performed at the antenna connector (conducted measurement) when the transmitter is adjusted in accordance with the tune-up procedure, if applicable. The RF output terminals are connected to a spectrum analyzer. If required, a resistive matching network equal to the impedance specified or employed for the antenna is used as well as dc block and appropriate attenuators (50 Ohms). The electrical characteristics of the radio frequency load attached to the output terminals shall be stated, if applicable.</p> <p>If radiated measurements are performed the same test setups and instruments are used as with radiated emission measurements for the appropriate frequency range.</p> <p>The analyzer settings are specified by the test description of the appropriate test record(s).</p> | |

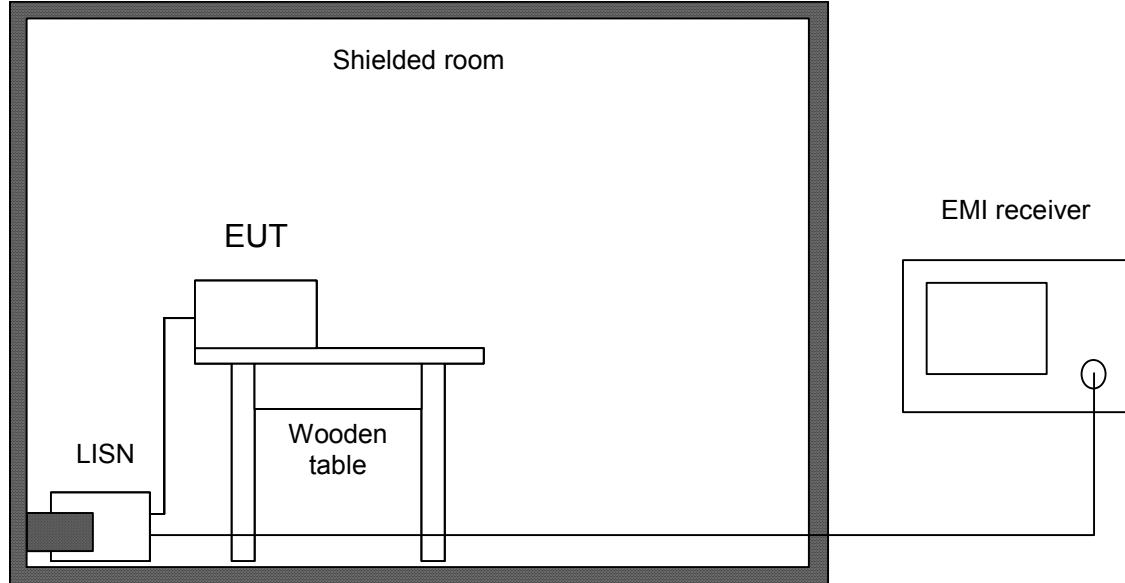


Test instruments used for conducted measurements:

| Used | Type | Model | Serial No. or ID | Manufacturer |
|-------------------------------------|-------------------|---------|------------------|-----------------|
| <input checked="" type="checkbox"/> | Spectrum Analyzer | FSP 30 | 100063 | Rohde & Schwarz |
| <input type="checkbox"/> | EMI test receiver | ESPI7 | 836914/0002 | Rohde & Schwarz |
| <input type="checkbox"/> | EMI test receiver | ESMI | 839379/013 | Rohde & Schwarz |
| | | | 839587/006 | |
| <input type="checkbox"/> | Power meter | NRVS | 836856/015 | Rohde & Schwarz |
| <input type="checkbox"/> | Peak power sensor | NRV-Z31 | 8579604.03 | Rohde & Schwarz |
| <input type="checkbox"/> | Power sensor | NRV-Z52 | 837901/030 | Rohde & Schwarz |
| <input type="checkbox"/> | Power sensor | NRV-Z4 | 863828/015 | Rohde & Schwarz |
| <input type="checkbox"/> | DC-block | 7006 | A2798 | Weinschel |
| <input type="checkbox"/> | Attenuator | 4776-10 | 9412 | Narda |
| <input type="checkbox"/> | Attenuator | 4776-20 | 9503 | Narda |

6.2 Conducted AC Powerline Emission

| Measurement Procedure: | |
|---|--|
| Rules and specifications: | CFR 47 Part 15, sections 15.107 and 15.207 |
| Guide: | ANSI C63.4 (CISPR 22) |
| Conducted emission tests in the frequency range 150 kHz to 30 MHz are performed using Line Impedance Stabilization Networks (LISNs). To simplify testing with quasi-peak and average detector the following procedure is used: | |
| First the whole spectrum of emission caused by the equipment under test (EUT) is recorded with detector set to peak using CISPR bandwidth of 10 kHz. After that all emission levels having less margin than 10 dB to or exceeding the average (CFR 47 Part 15) or quasi-peak (IC RSS-210) limit are retested with detector set to quasi-peak. | |
| If average limit is kept with quasi-peak levels 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 is performed. | |
| According to ANSI C63.4, section 13.1.3.1, testing of intentional radiators with detachable antenna shall be performed using a suitable dummy load connected to the antenna output terminals. Otherwise, the tests shall be made with the antenna connected and, if adjustable, fully extended. | |
| Testing with dummy load may be necessary to distinguish (unintentional) conducted emissions on the supply lines from (intentional) emissions radiated by the antenna and coupling directly to supply lines and/or LISN. Usage of dummy load has to be stated in the appropriate test record(s) and notes should be added to clarify the test setup. | |



Test instruments used:

| Used | Type | Model | Serial No. or ID | Manufacturer |
|-------------------------------------|--------------------------|----------|------------------|--------------------|
| <input checked="" type="checkbox"/> | EMI receiver | ESHS 10 | 860043/016 | Rohde & Schwarz |
| <input checked="" type="checkbox"/> | LISN | ESH3-Z5 | 862770/021 | Rohde & Schwarz |
| <input type="checkbox"/> | LISN | ESH3-Z5 | 830952/025 | Rohde & Schwarz |
| <input type="checkbox"/> | Artificial mains network | ESH 2-Z5 | 842966/004 | Rohde & Schwarz |
| <input type="checkbox"/> | Shielded room | No. 1 | 1451 | Albatross Projects |
| <input checked="" type="checkbox"/> | Shielded room | No. 4 | 3FD-100 544 | Euroshield |

6.3 Radiated Emission in Fully or Semi Anechoic Room

Measurement Procedure:

Rules and specifications: CFR 47 Part 15, sections 15.109, 15.215(b) and 15.249

Guide: ANSI C63.4

Radiated emission in fully or semi anechoic room is measured in the frequency range from 30 MHz to the maximum frequency as specified in CFR 47 Part 15 section 15.33.

Measurements are 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 as well as video bandwidth set to 100 kHz (below 1 GHz) or 1 MHz (above 1 GHz).

Testing up to 1 GHz is performed with a linear polarized logarithmic periodic antenna combined with a 4:1 broadband dipole ("Trilog broadband antenna"). For testing above 1 GHz horn antennas are used.

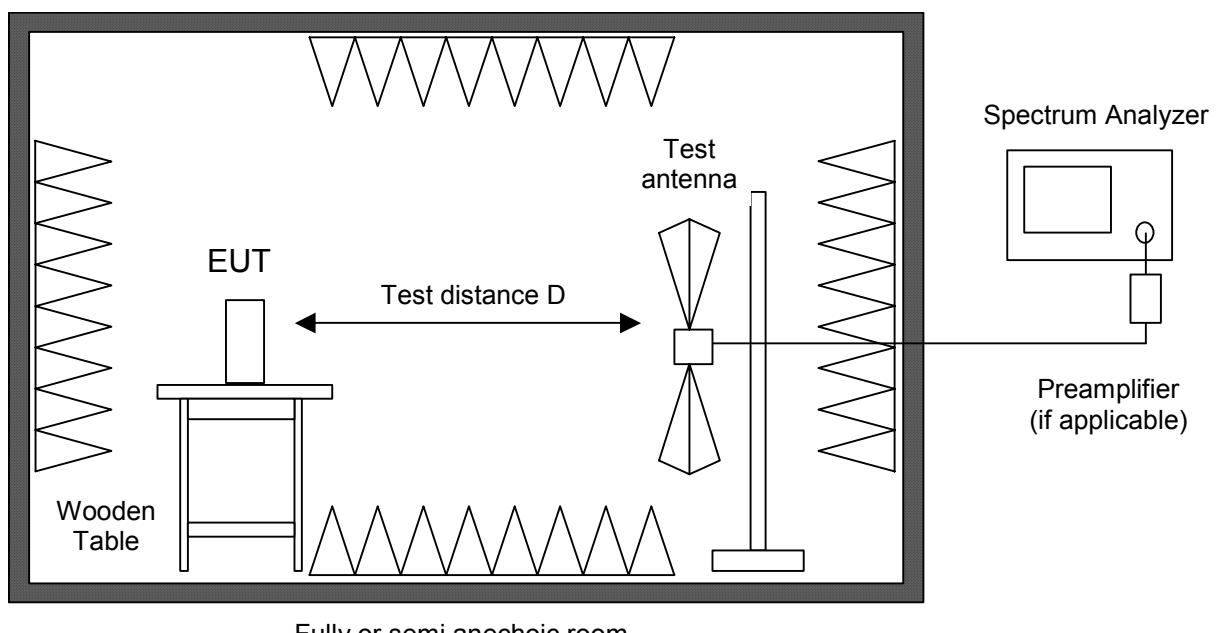
All tests below 18 GHz are performed at a test distance D of 3 meters. For higher frequencies the test distance is reduced (e.g. to 1 meter) due to the sensitivity of the measuring instrument(s) and the test results are calculated according to CFR 47 Part 15 section 15.31(f)(1) using an extrapolation factor of 20 dB/decade. If required, preamplifiers are used for the whole frequency range. Special care is taken to avoid overload, using appropriate attenuators and filters, if necessary.

If the radiated emission limits are expressed in terms of the average value of the emission there also is a peak limit corresponding to 20 dB above the maximum permitted average limit. Additionally, if pulsed operation is employed, the average field strength is determined by averaging over one complete pulse train, including blanking intervals, as specified in CFR 47 Part 15 section 15.35(c). If the pulse train exceeds 0.1 second that 0.1 second interval during which the value of the emission is at its maximum is selected for calculation. The pulse train correction is added to the peak value of the emission to get the average value.

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.

During testing the EUT is rotated all around to find the maximum levels of emissions. Equipment and cables are placed and moved within the range of position likely to find their maximum emissions.

For final testing below 1 GHz an open field test-site is used and the plots recorded in the fully or semi anechoic room are indicated as prescans.

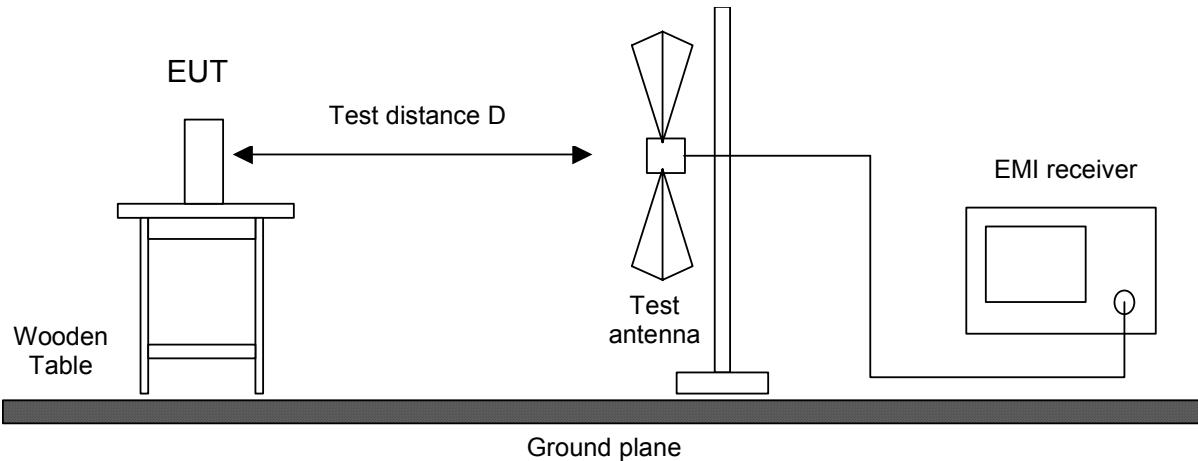


Test instruments used:

| Used | Type | Model | Serial No. or ID | Manufacturer |
|-------------------------------------|--------------------------|----------------------|--------------------------|--------------------|
| <input checked="" type="checkbox"/> | Spectrum Analyzer | FSP 30 | 100063 | Rohde & Schwarz |
| <input type="checkbox"/> | Spectrum analyzer | R 3271 | 05050023 | Advantest |
| <input checked="" type="checkbox"/> | EMI test receiver | ESMI | 839379/013 839587/006 | Rohde & Schwarz |
| <input checked="" type="checkbox"/> | Preamplifier | CPA9231A | 3393 | Schaffner |
| <input type="checkbox"/> | Preamplifier | R14601 | | Advantest |
| <input type="checkbox"/> | Preamplifier 1-8 GHz | AFS3-00100800-32-LN | 847743 | Miteq |
| <input type="checkbox"/> | Preamplifier 0.5-8 GHz | AMF-4D-005080-25-13P | 860149 | Miteq |
| <input type="checkbox"/> | Preamplifier 8-18 GHz | ACO/180-3530 | 32641 | CTT |
| <input type="checkbox"/> | External Mixer | WM782A | 845881/005 | Tektronix |
| <input type="checkbox"/> | Harmonic Mixer | FS-Z30 | 843389/007 | Rohde & Schwarz |
| | Accessories | | | |
| <input type="checkbox"/> | Trilog broadband antenna | VULB 9163 | 9163-188 | Schwarzbeck |
| <input type="checkbox"/> | Horn antenna | 3115 | 9508-4553 | EMCO |
| <input type="checkbox"/> | Horn antenna | 3160-03 | 9112-1003 | EMCO |
| <input type="checkbox"/> | Horn antenna | 3160-04 | 9112-1001 | EMCO |
| <input type="checkbox"/> | Horn antenna | 3160-05 | 9112-1001 | EMCO |
| <input type="checkbox"/> | Horn antenna | 3160-06 | 9112-1001 | EMCO |
| <input type="checkbox"/> | Horn antenna | 3160-07 | 9112-1008 | EMCO |
| <input type="checkbox"/> | Horn antenna | 3160-08 | 9112-1002 | EMCO |
| <input type="checkbox"/> | Horn antenna | 3160-09 | 9403-1025 | EMCO |
| <input type="checkbox"/> | Horn antenna | 3160-10 | 399185 | EMCO |
| <input type="checkbox"/> | Fully anechoic room | No. 2 | 1452 | Albatross Projects |
| <input type="checkbox"/> | Semi-anechoic room | No. 3 | 1453 | Siemens |

6.4 Radiated Emission at Open Field Test Site

| Measurement Procedure: | |
|---|---|
| Rules and specifications: | CFR 47 Part 15, sections 15.109, 15.215(b) and 15.249 |
| Guide: | ANSI C63.4 |
| <p>Radiated emission at open field test site is measured in the frequency range 30 MHz to 1 GHz using a biconical antenna up to 300 MHz and a logarithmic periodic antenna above. The measurement bandwidth of the test receiver is set to 120 kHz with quasi-peak detector selected.</p> <p>If the radiated emission limits are expressed in terms of the average value of the emission there also is a peak limit corresponding to 20 dB above the maximum permitted average limit. Additionally, if pulsed operation is employed, the average field strength is determined by averaging over one complete pulse train, including blanking intervals, as specified in CFR 47 Part 15 section 15.35(c). If the pulse train exceeds 0.1 second that 0.1 second interval during which the value of the emission is at its maximum is selected for calculation. The pulse train correction is added to the peak value of the emission to get the average value.</p> <p>Hand-held or body-worn devices are tested in the position producing the highest emission relative to the limit as verified by prescans in the fully anechoic room. EUT is rotated all around and receiving antenna is raised and lowered within 1 meter to 4 meters to find the maximum levels of emission. Equipment and cables are placed and moved within the range of position likely to find their maximum emissions.</p> <p>For measuring emissions of intentional radiators and receivers a test distance D of 3 meters is selected. Testing of unintentional radiators is performed at a distance of 10 meters. If limits specified for 3 meters shall be used for measurements performed at 10 meters distance the limits are calculated according to CFR 47 Part 15 section 15.31(d) and (f)(1) using an inverse linear-distance extrapolation factor of 20 dB/decade.</p> | |

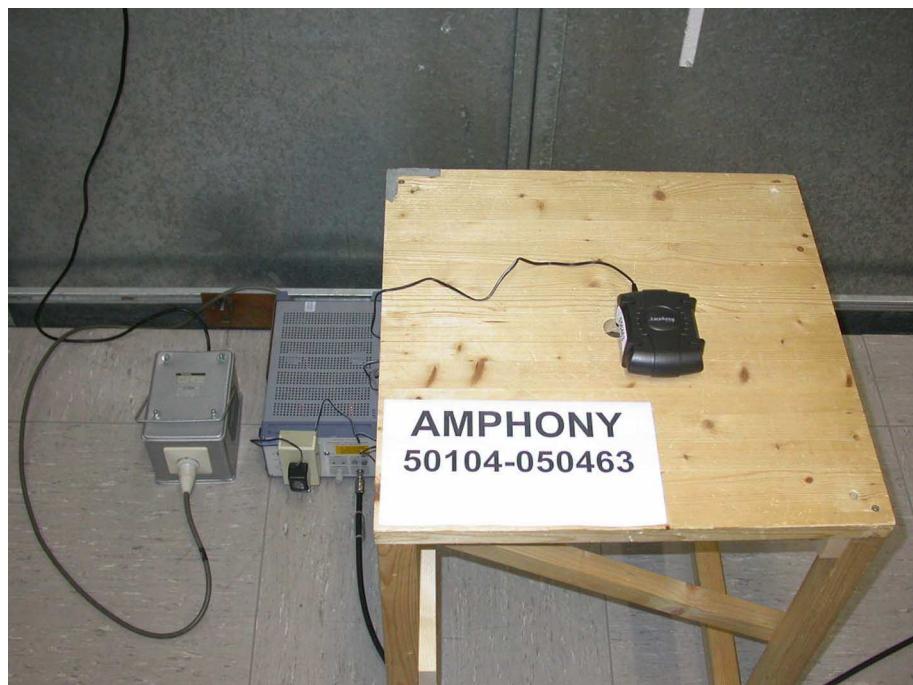
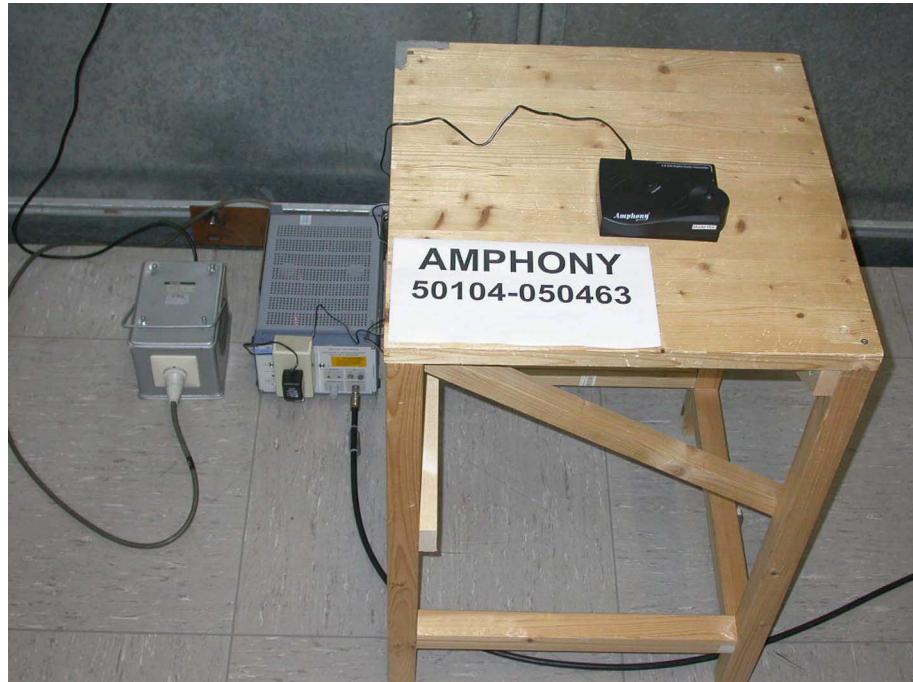


Test instruments used:

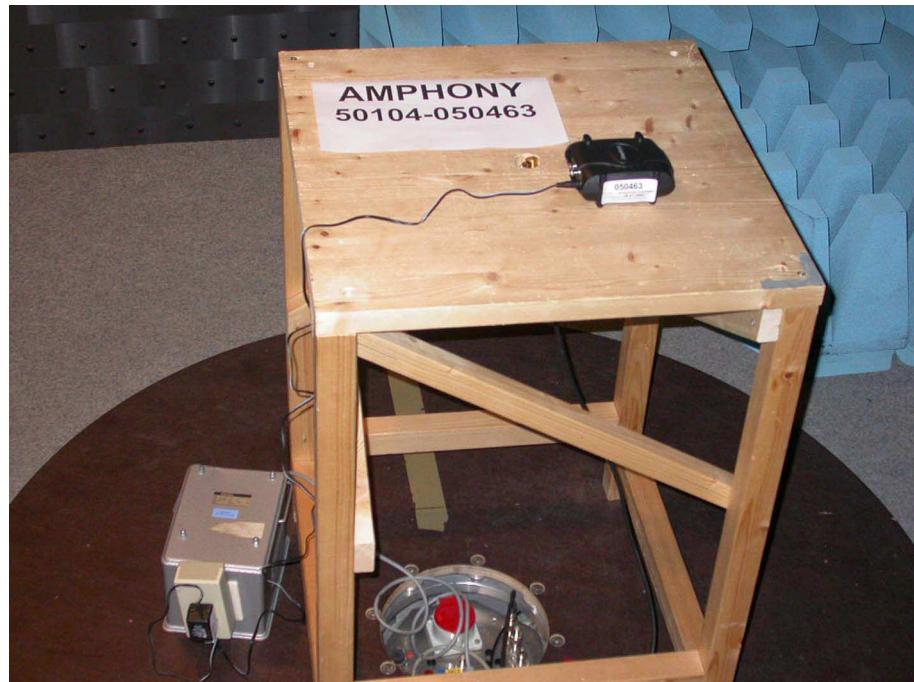
| Used | Type | Model | Serial No. or ID | Manufacturer |
|-------------------------------------|----------------------|-------|------------------|-----------------|
| <input checked="" type="checkbox"/> | EMI receiver | ESVP | 881414/009 | Rohde & Schwarz |
| <input checked="" type="checkbox"/> | Biconical antenna | EG 1 | HK 116 | Rohde & Schwarz |
| <input checked="" type="checkbox"/> | Log. per. antenna | EG 1 | HL 223 | Rohde & Schwarz |
| <input checked="" type="checkbox"/> | Open field test site | EG 1 | 1450 | Senton |

7 Photographs Taken During Testing

Test setup for conducted AC powerline emission measurement



**Test setup for radiated emission measurement
(fully anechoic room)**



**Test setup for radiated emission measurement
(fully anechoic room) - continued -**



8 Test Results for Transmitter

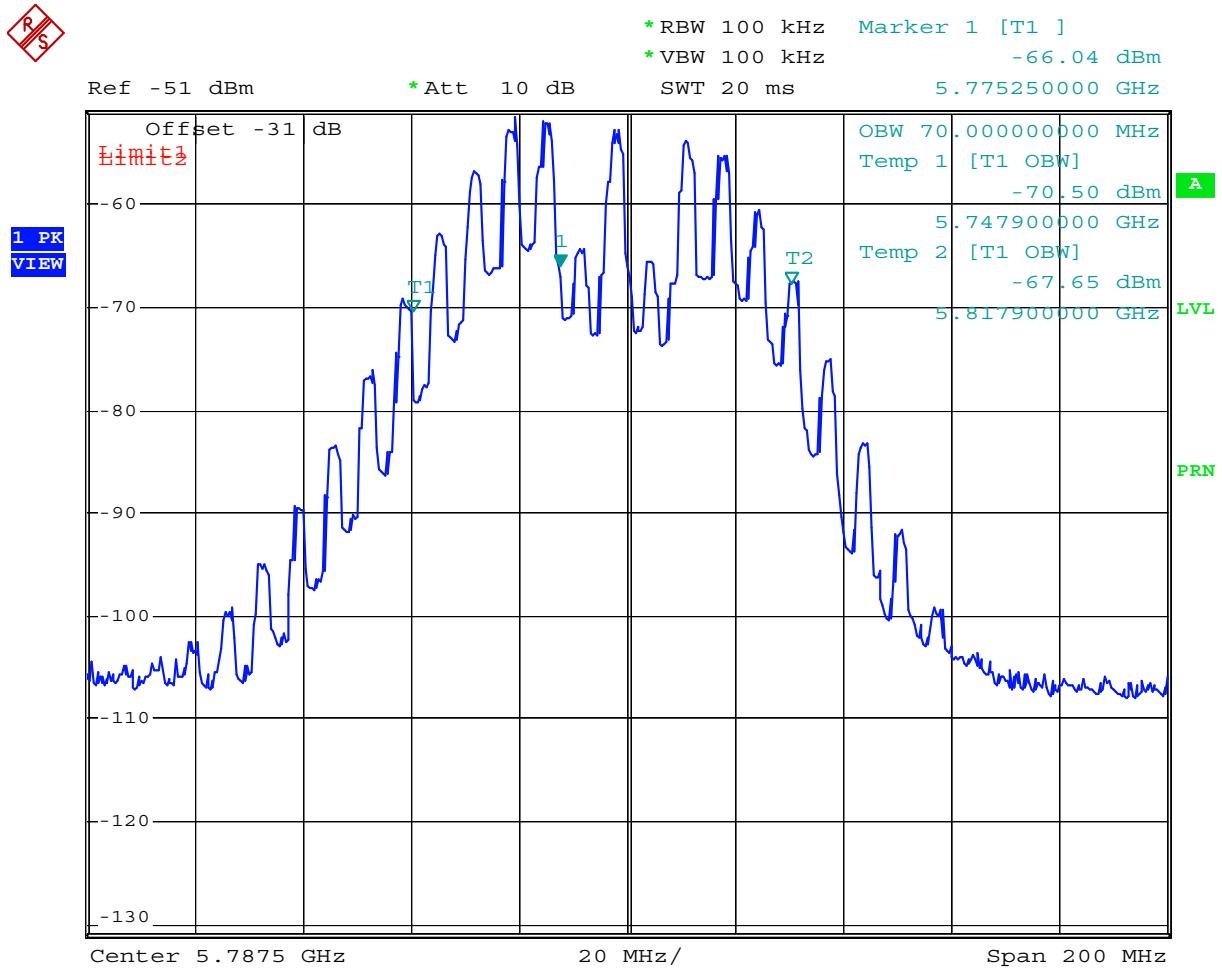
| FCC CFR 47 Parts 2 and 15 | | | |
|----------------------------------|--|-------------|---|
| Section(s) | Test | Page | Result |
| 2.1046(a) | Conducted output power | --- | Not applicable |
| 2.202(a) | Occupied bandwidth | 20 | Recorded |
| 15.215(c) | Bandwidth of the emission | --- | Not applicable |
| 2.201, 2.202 | Class of emission | --- | Calculated |
| 15.35(c) | Pulse train measurement for pulsed operation | --- | Not applicable |
| 15.205(a) | Restricted bands of operation | 22 | Test passed |
| 15.207 | Conducted AC powerline emission 150 kHz to 30 MHz | 23 | Test passed |
| 15.205(b) 15.249 | Radiated emission 9 kHz to 30 MHz | --- | Not applicable according to CFR 47 Part 15, section 15.33(a) |
| 15.205(b) 15.215(b) 15.249 | Radiated emission 6 MHz to 40 GHz | 24 | Test passed |

8.1 Occupied Bandwidth

| Rules and specifications: | CFR 47 Part 2, section 2.202(a) ANSI C63.4, annex H.6 | | | | | | | | |
|---------------------------|---|-----------------------|------------------------------|-----------------|-------|--------------------|--------|--------------------|---------|
| Guide: | ANSI C63.4 | | | | | | | | |
| Description: | <p>The occupied bandwidth according to CFR 47 Part 2, section 2.202(a), is measured as the 99% emission bandwidth, i.e. below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5% of the total mean power radiated by a given emission.</p> <p>The occupied bandwidth according to ANSI C63.4, annex H.6; is measured as the frequency range defined by the points that are 26 dB down relative to the maximum level of the modulated carrier.</p> <p>The resolution bandwidth of the spectrum analyzer shall be set to a value greater than 5.0% of the allowed bandwidth. If no bandwidth specifications are given, the following guidelines are used:</p> <table border="1"><thead><tr><th>Fundamental frequency</th><th>Minimum resolution bandwidth</th></tr></thead><tbody><tr><td>9 kHz to 30 MHz</td><td>1 kHz</td></tr><tr><td>30 MHz to 1000 MHz</td><td>10 kHz</td></tr><tr><td>1000 MHz to 40 GHz</td><td>100 kHz</td></tr></tbody></table> <p>The video bandwidth shall be at least three times greater than the resolution bandwidth.</p> | Fundamental frequency | Minimum resolution bandwidth | 9 kHz to 30 MHz | 1 kHz | 30 MHz to 1000 MHz | 10 kHz | 1000 MHz to 40 GHz | 100 kHz |
| Fundamental frequency | Minimum resolution bandwidth | | | | | | | | |
| 9 kHz to 30 MHz | 1 kHz | | | | | | | | |
| 30 MHz to 1000 MHz | 10 kHz | | | | | | | | |
| 1000 MHz to 40 GHz | 100 kHz | | | | | | | | |
| Measurement procedure: | Bandwidth Measurements (6.1) | | | | | | | | |

| | |
|---------------|----------------------------------|
| Comment: | |
| Date of test: | 25 October 2005 |
| Test site: | Fully anechoic room, cabin no. 2 |

Occupied Bandwidth (99 %):



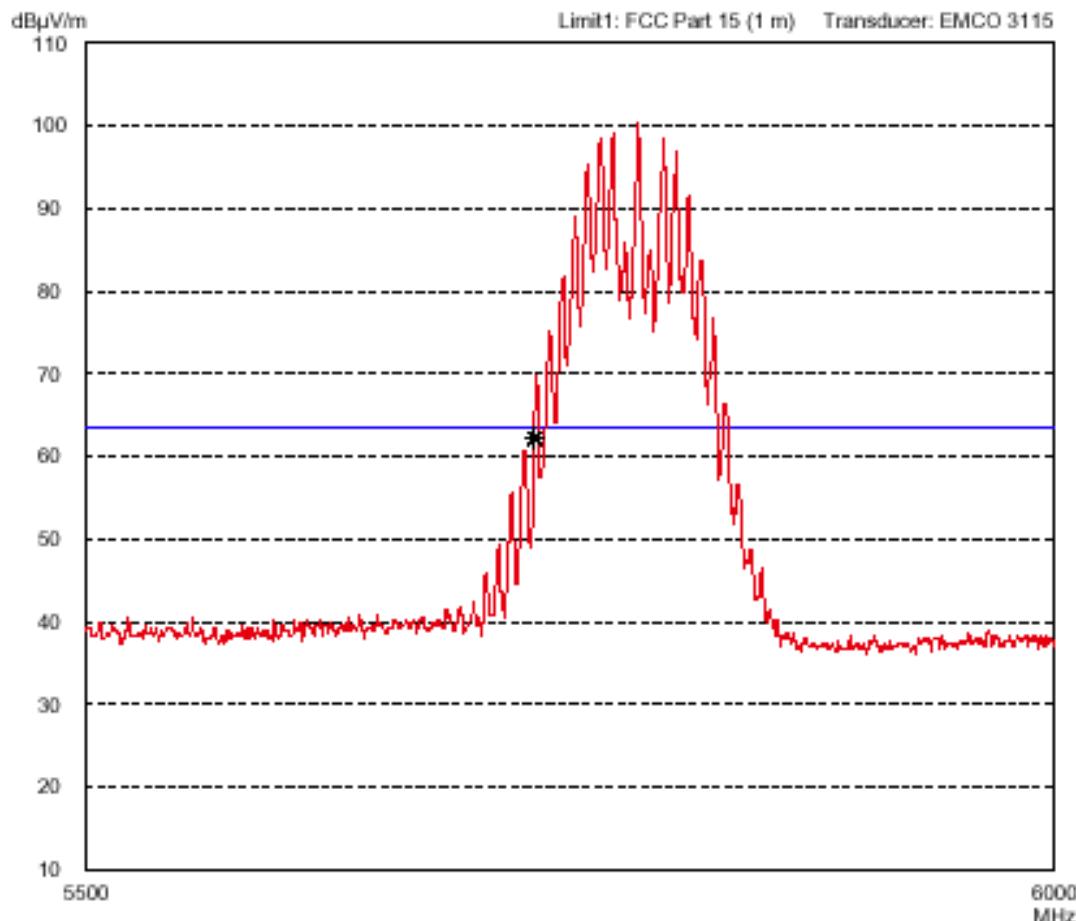
Comment: AMP050463: Occupied Bandwidth
 Date: 25.OCT.2005 16:02:28

Occupied Bandwidth (99 %): **70 MHz**

8.2 Restricted Bands of Operation

| | |
|---------------------------|--|
| Rules and specifications: | CFR 47 Part 15, section 15.205(a) |
| Guide: | ANSI C63.4 |
| Limit: | Only spurious emissions are permitted in any of the frequency bands listed in CFR 47 Part 15, section 15.205(a) or IC RSS-210 Issue 5, section 6.3(a). |
| Measurement procedure: | Radiated Emission in Fully or Semi Anechoic Room (6.3) |

| | |
|----------------|----------------------------------|
| Comment: | |
| Date of test: | 11 August 2005 |
| Test site: | Fully anechoic room, cabin no. 2 |
| Test distance: | 1 meter |



Test Result:

Test passed

8.3 Conducted Powerline Emission Measurement 150 kHz to 30 MHz

| | | | | | |
|---------------------------|---------------------------------------|------------------------------|----------|-----------------------------|------------------------------|
| Rules and specifications: | CFR 47 Part 15, section 15.207 | | | | |
| Guide: | ANSI C63.4 / CISPR 22 | | | | |
| Limit: | CFR 47 Part 15 | | | IC RSS-210 | |
| | Frequency of Emission (MHz) | Conducted Limit (dB μ V) | | Frequency of Emission (MHz) | Conducted Limit (dB μ V) |
| | | Quasi-peak | Average | | Quasi-peak |
| | 0.15 - 0.5 | 66 to 56 | 56 to 46 | 0.45 - 30 | 48 |
| | 0.5 - 5 | 56 | 46 | | |
| | 5 - 30 | 60 | 50 | | |
| Measurement procedure: | Conducted AC Powerline Emission (6.2) | | | | |

| | | | |
|---------------|----------------------------|--|--|
| Comment: | | | |
| Date of test: | 18 October 2005 | | |
| Test site: | Shielded room, cabin no. 1 | | |

| | | | |
|--------------|-------------|--|--|
| Test Result: | Test passed | | |
|--------------|-------------|--|--|

| | | | |
|------------|----------------------|--|--|
| Tested on: | Linecord / Live wire | | |
|------------|----------------------|--|--|

| Frequency (MHz) | Detector | Reading Value (dB μ V) | Correction Factor (dB) | Final Value (dB μ V) | CFR 47 Part 15 Limit (dB μ V) | Margin (dB) | RSS-210 Limit (dB μ V) | Margin (dB) |
|-----------------|------------|----------------------------|------------------------|--------------------------|-----------------------------------|-------------|----------------------------|-------------|
| 0.310 | Quasi-Peak | 32.1 | 0.0 | 32.1 | 60.0 | 27.9 | | |
| 0.370 | Quasi-Peak | 29.9 | 0.0 | 29.9 | 58.5 | 28.6 | | |

| | | | |
|------------|-------------------------|--|--|
| Tested on: | Linecord / Neutral wire | | |
|------------|-------------------------|--|--|

| Frequency (MHz) | Detector | Reading Value (dB μ V) | Correction Factor (dB) | Final Value (dB μ V) | CFR 47 Part 15 Limit (dB μ V) | Margin (dB) | RSS-210 Limit (dB μ V) | Margin (dB) |
|-----------------|------------|----------------------------|------------------------|--------------------------|-----------------------------------|-------------|----------------------------|-------------|
| 0.320 | Quasi-Peak | 30.5 | 0.0 | 30.5 | 59.7 | 29.2 | | |

Sample calculation of final values:

$$\text{Final Value (dB}\mu\text{V)} = \text{Reading Value (dB}\mu\text{V)} + \text{Correction Factor (dB)}$$

8.4 Radiated Emission Measurement 6 MHz to 40 GHz

| | | | |
|---------------------------|---|-----------------------------|-------------------------------|
| Rules and specifications: | CFR 47 Part 15, sections 15.215(b) and 15.249 | | |
| Guide: | ANSI C63.4 | | |
| Limit: | Frequency of Emission (MHz) | Field Strength (μ V/m) | Field Strength (dB μ V/m) |
| | 30 - 88 | 100 | 40.0 |
| | 88 - 216 | 150 | 43.5 |
| | 216 - 960 | 200 | 46.0 |
| | Above 960 | 500 | 54.0 |
| | Additionally, the level of any unwanted emissions shall not exceed the level of the fundamental emission. | | |
| Measurement procedures: | Radiated Emission in Fully or Semi Anechoic Room (6.3) Radiated Emission at Open Field Test Site (6.4) | | |

| | |
|----------------|---|
| Comment: | |
| Date of test: | 11 August 2005 |
| Test site: | Frequencies \leq 1 GHz: Open field test site Frequencies $>$ 1 GHz: Fully anechoic room, cabin no. 2 |
| Test distance: | 3 meters, 1meter ($>$ 4 GHz) |

| | |
|--------------|-------------|
| Test Result: | Test passed |
|--------------|-------------|

| Frequency (MHz) | Antenna Polarization | Detector | Receiver Reading (dB μ V) | Correction Factor (dB/m) | Pulse Train Correction (dB) | Final Value (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) |
|-----------------|----------------------|----------|-------------------------------|--------------------------|-----------------------------|----------------------------|----------------------|-------------|
| 2896.000 | vertical | Peak | 9.5 | 37.8 | | 47.3 | 54.0 | 6.7 |
| 2902.000 | horizontal | Peak | 10.1 | 37.8 | | 48.0 | 54.0 | 6.1 |
| 5722.000 | horizontal | Average | 18.4 | 42.9 | | 61.3 | 63.5 | 2.2 |
| 5787.500 | vertical | Peak | 58.4 | 43.1 | | 101.5 | 103.5 | 2.0 |
| 5872.000 | horizontal | Peak | 7.7 | 43.1 | | 50.8 | 63.5 | 12.7 |
| 8636.800 | vertical | Peak | 12.4 | 43.5 | | 55.9 | 63.5 | 7.6 |
| 8695.600 | vertical | Peak | 12.2 | 43.5 | | 55.7 | 63.5 | 7.8 |
| 11509.600 | vertical | Peak | 13.5 | 45.5 | | 59.0 | 63.5 | 4.5 |
| 11526.400 | vertical | Peak | 17.5 | 45.6 | | 63.1 | 63.5 | 0.4 |
| 11610.400 | vertical | Peak | 11.8 | 45.6 | | 57.4 | 63.5 | 6.1 |
| 12290.800 | horizontal | Peak | 7.9 | 46.2 | | 54.1 | 63.5 | 9.4 |
| 12383.200 | horizontal | Peak | 7.4 | 46.2 | | 53.6 | 63.5 | 9.9 |
| 12400.000 | vertical | Peak | 7.5 | 46.2 | | 53.7 | 63.5 | 9.8 |

Sample calculation of final values:

$$\text{Final Value (dB}\mu\text{V/m)} = \text{Reading Value (dB}\mu\text{V)} + \text{Correction Factor (dB/m)} + \text{Pulse Train Correction (dB)}$$

9 Test Results for Receiver

| FCC CFR 47 Part 15 | | | |
|---------------------------|---|-------------|----------------|
| <i>Section(s)</i> | <i>Test</i> | <i>Page</i> | <i>Result</i> |
| 15.107 | Conducted AC powerline emission 150 kHz to 30 MHz | 26 | Test passed |
| 15.109 | Radiated emission 30 MHz to 40 GHz | 27 | Test passed |
| 15.111(a) | Antenna power conduction emission of receivers 9 kHz to 40 GHz | --- | Not applicable |

9.1 Conducted Powerline Emission Measurement 150 kHz to 30 MHz

| | | | | | |
|---------------------------|---------------------------------------|------------------------------|----------|-----------------------------|------------------------------|
| Rules and specifications: | CFR 47 Part 15, section 15.107 | | | | |
| Guide: | ANSI C63.4 / CISPR 22 | | | | |
| Limit: | CFR 47 Part 15 | | | IC RSS-210 | |
| | Frequency of Emission (MHz) | Conducted Limit (dB μ V) | | Frequency of Emission (MHz) | Conducted Limit (dB μ V) |
| | | Quasi-peak | Average | | Quasi-peak |
| | 0.15 - 0.5 | 66 to 56 | 56 to 46 | 0.45 - 30 | 48 |
| | 0.5 - 5 | 56 | 46 | | |
| | 5 - 30 | 60 | 50 | | |
| Measurement procedure: | Conducted AC Powerline Emission (6.2) | | | | |

| | | |
|---------------|----------------------------|--|
| Comment: | | |
| Date of test: | 18 October 2005 | |
| Test site: | Shielded room, cabin no. 1 | |

| | | |
|--------------|-------------|--|
| Test Result: | Test passed | |
|--------------|-------------|--|

| | | |
|------------|----------------------|--|
| Tested on: | Linecord / Live wire | |
|------------|----------------------|--|

| Frequency (MHz) | Detector | Reading Value (dB μ V) | Correction Factor (dB) | Final Value (dB μ V) | CFR 47 Part 15 Limit (dB μ V) | Margin (dB) | RSS-210 Limit (dB μ V) | Margin (dB) |
|-----------------|------------|----------------------------|------------------------|--------------------------|-----------------------------------|-------------|----------------------------|-------------|
| 0.295 | Quasi-Peak | 31.6 | 31.6 | 60.4 | | | | |

| | | |
|------------|-------------------------|--|
| Tested on: | Linecord / Neutral wire | |
|------------|-------------------------|--|

No emissions above noise level detected

Sample calculation of final values:

$$\text{Final Value (dB}\mu\text{V)} = \text{Reading Value (dB}\mu\text{V)} + \text{Correction Factor (dB)}$$

9.2 Radiated Emission Measurement 30 MHz to 40 GHz

| | | | |
|---------------------------|---|-----------------------------|-------------------------------|
| Rules and specifications: | CFR 47 Part 15, section 15.109 (Class B) | | |
| Guide: | ANSI C63.4 | | |
| Limit: | Frequency of Emission (MHz) | Field Strength (μ V/m) | Field Strength (dB μ V/m) |
| | 30 - 88 | 100 | 40.0 |
| | 88 - 216 | 150 | 43.5 |
| | 216 - 960 | 200 | 46.0 |
| | Above 960 | 500 | 54.0 |
| Measurement procedures: | Radiated Emission in Fully or Semi Anechoic Room (6.3) Radiated Emission at Open Field Test Site (6.4) | | |

| | |
|----------------|---|
| Comment: | |
| Date of test: | 11 August 2005 |
| Test site: | Frequencies \leq 1 GHz: Open field test site Frequencies $>$ 1 GHz: Fully anechoic room, cabin no. 2 |
| Test distance: | 3 meters |

| | |
|--------------|-------------|
| Test Result: | Test passed |
|--------------|-------------|

| Frequency (MHz) | Antenna Polarization | Detector | Receiver Reading (dB μ V) | Correction Factor (dB/m) | Final Value (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) |
|-----------------|----------------------|----------|-------------------------------|--------------------------|----------------------------|----------------------|-------------|
| 12013.600 | horizontal | Peak | 7.7 | 46.0 | 53.6 | 63.5 | 9.9 |
| 12181.600 | vertical | Peak | 8.0 | 46.1 | 54.1 | 63.5 | 9.4 |
| 12358.000 | horizontal | Peak | 7.7 | 46.2 | 53.9 | 63.5 | 9.6 |

Sample calculation of field final values:

$$\text{Final Value (dB}\mu\text{V/m)} = \text{Reading Value (dB}\mu\text{V)} + \text{Correction Factor (dB/m)}$$

10 Referenced Regulations

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

| | | | |
|-------------------------------------|--------------------------|---|--|
| <input checked="" type="checkbox"/> | 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 |
| <input checked="" type="checkbox"/> | CFR 47 Part 15 | Code of Federal Regulations Part 15 (Radio Frequency Devices) of the Federal Communication Commission (FCC) | September 19, 2005 |
| <input checked="" type="checkbox"/> | 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) |
| <input checked="" type="checkbox"/> | 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 |
| <input checked="" type="checkbox"/> | 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 |
| <input type="checkbox"/> | ICES-003 | Interference-Causing Equipment Standard ICES-003 Issue 4 for Digital Apparatus, published by Industry Canada | February 2004 |
| <input checked="" type="checkbox"/> | 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 |
| <input type="checkbox"/> | CAN/CSA-CEI/IEC CISPR 22 | Limits and Methods of Measurement of Radio Disturbance Characteristics of Information Technology Equipment | 2002 |
| <input checked="" type="checkbox"/> | 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 |

11 Charts taken during testing

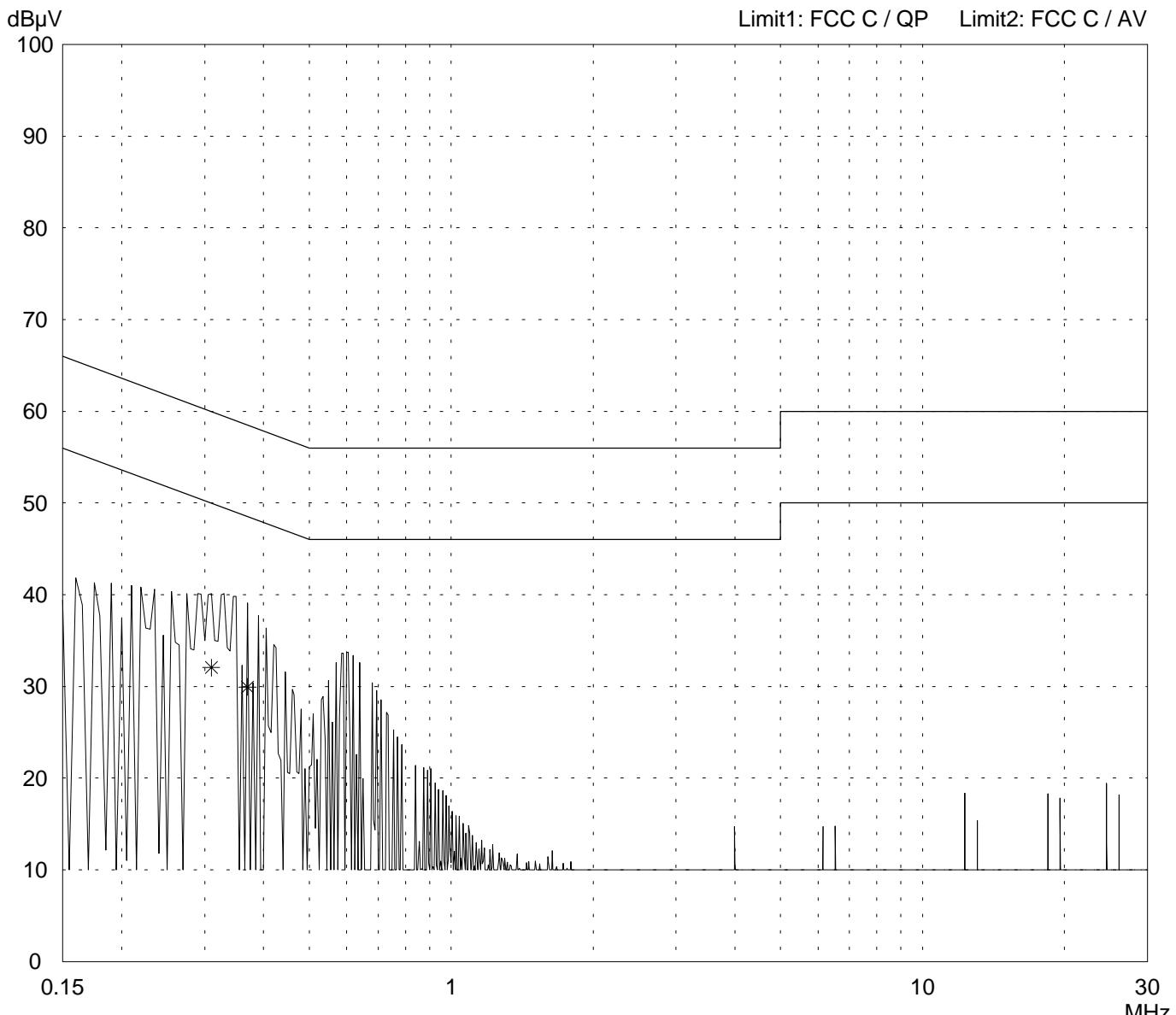
Conducted Emission Test 150 kHz - 30 MHz according to FCC Part 15 Subpart C

| | |
|--|-----------------------|
| Model: H 1500 | |
| Serial no.: Transmitter | |
| Applicant: Amphony Deutschland GmbH | |
| Test site: Shielded room, cabin no. 1 | |
| Tested on: Linecord | |
| Date of test: 10/18/2005 | Operator: J. Roidt |
| Test performed: automatically | File name: |

| |
|--------------------------------|
| Mode: |
| Final results: 20 dB Margin |

| |
|---------------------------------------|
| Detector: Peak / Final Results: QP |
|---------------------------------------|

| | |
|--------------------------------|--------------|
| Final results: 20 dB Margin | 25 Subranges |
|--------------------------------|--------------|



| |
|-----------------------|
| Result: Limit kept |
|-----------------------|

| | | | |
|--------------------------------|------|----|-------|
| Project file: 50104-50463-1 | Page | of | Pages |
|--------------------------------|------|----|-------|

Conducted Emission Test 150 kHz - 30 MHz according to FCC Part 15 Subpart C

Model:
H 1500

Serial no.:
Transmitter

Applicant:
Amphony Deutschland GmbH

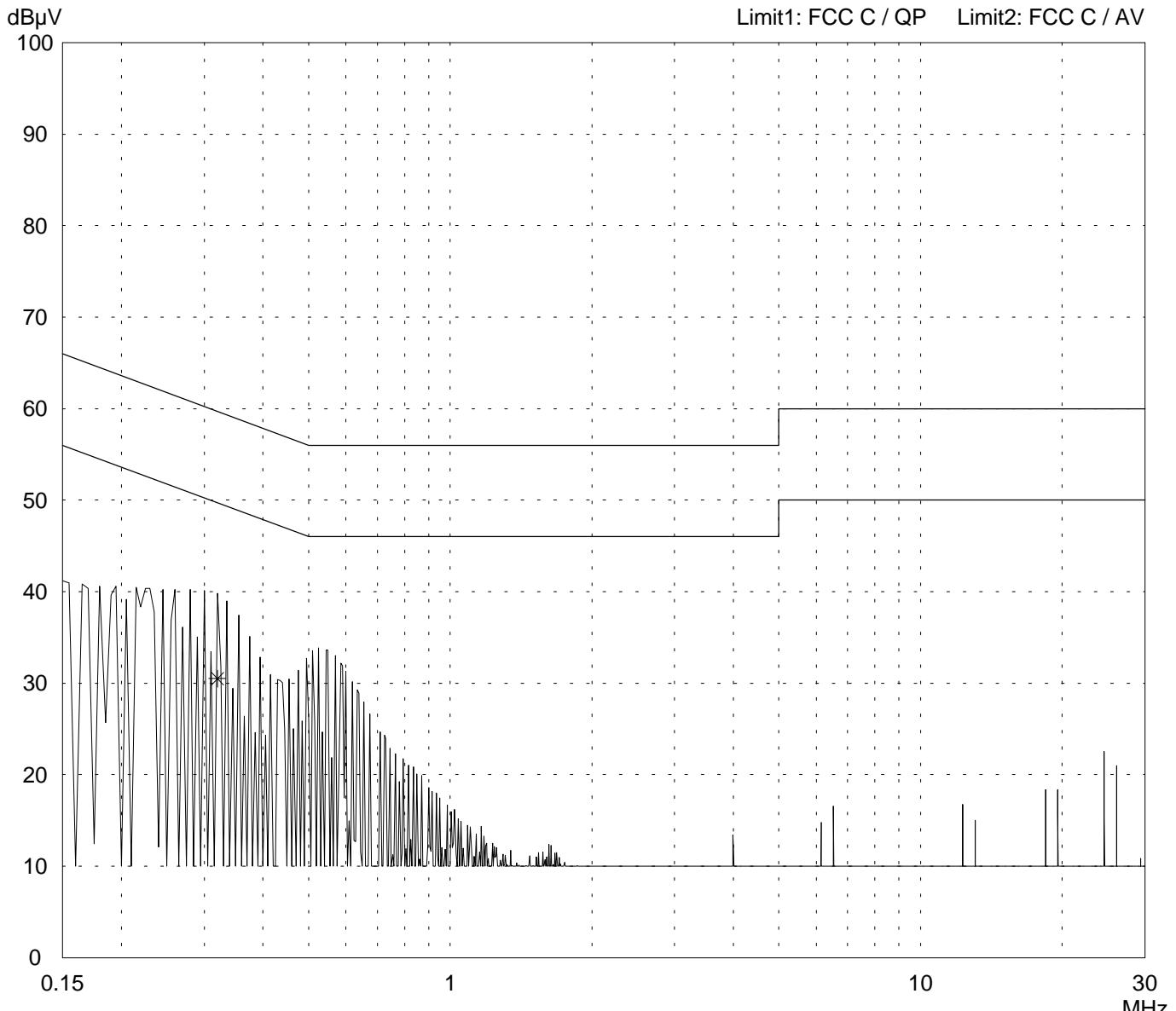
Test site:
Shielded room, cabin no. 1

Tested on:
Linecord
Neutral Wire

| | |
|----------------------------------|-----------------------|
| Date of test: 10/18/2005 | Operator: J. Roidt |
| Test performed: automatically | File name: |

Detector:
Peak / Final Results: QP

Final results:
20 dB Margin 25 Subranges



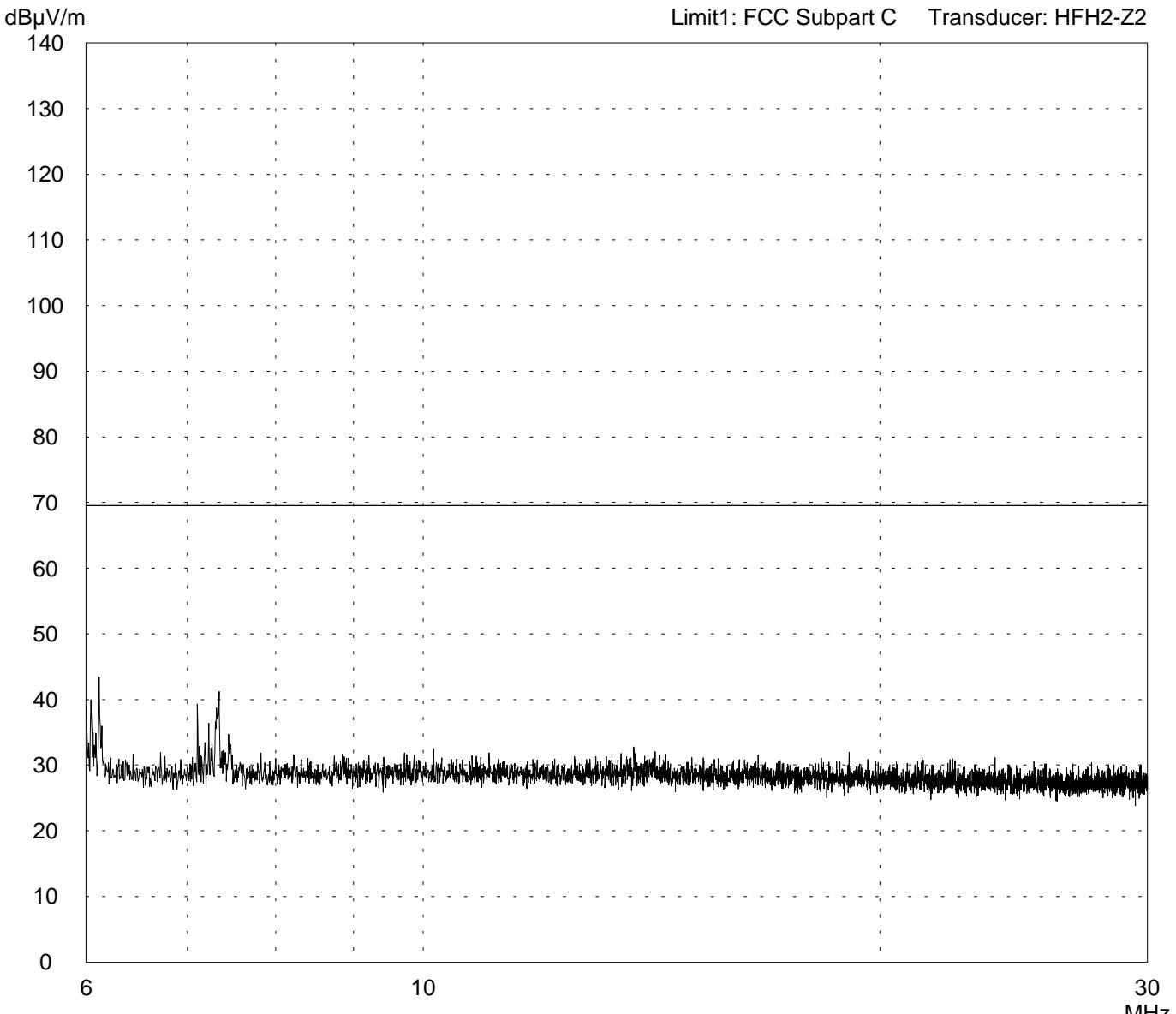
Result:
Limit kept

Project file:
50104-50463-1 Page of Pages

Radiated Emission Test 6 MHz - 30 MHz according to FCC Part 15 Subpart C

| | |
|--|-----------------------------|
| Model: Model 1500 | Mode: TX + RX under Test |
| Serial no.: Prototype | |
| Applicant: Amphony Deutschland GmbH | |
| Test site: Shielded room, cabin no. 1 | |
| Tested on: Test distance 3 metres | |
| Date of test: 11/18/2005 | Operator: J. Roidt |
| Test performed: automatically | File name: |

| | | |
|---------------------------------------|--------------------------------|--------------|
| Detector: Peak / Final Results: QP | Final results: 20 dB Margin | 25 Subranges |
|---------------------------------------|--------------------------------|--------------|



| |
|-----------------------|
| Result: Limit kept |
|-----------------------|

| | | | |
|--------------------------------|------|----|-------|
| Project file: 50104-05043-1 | Page | of | Pages |
|--------------------------------|------|----|-------|

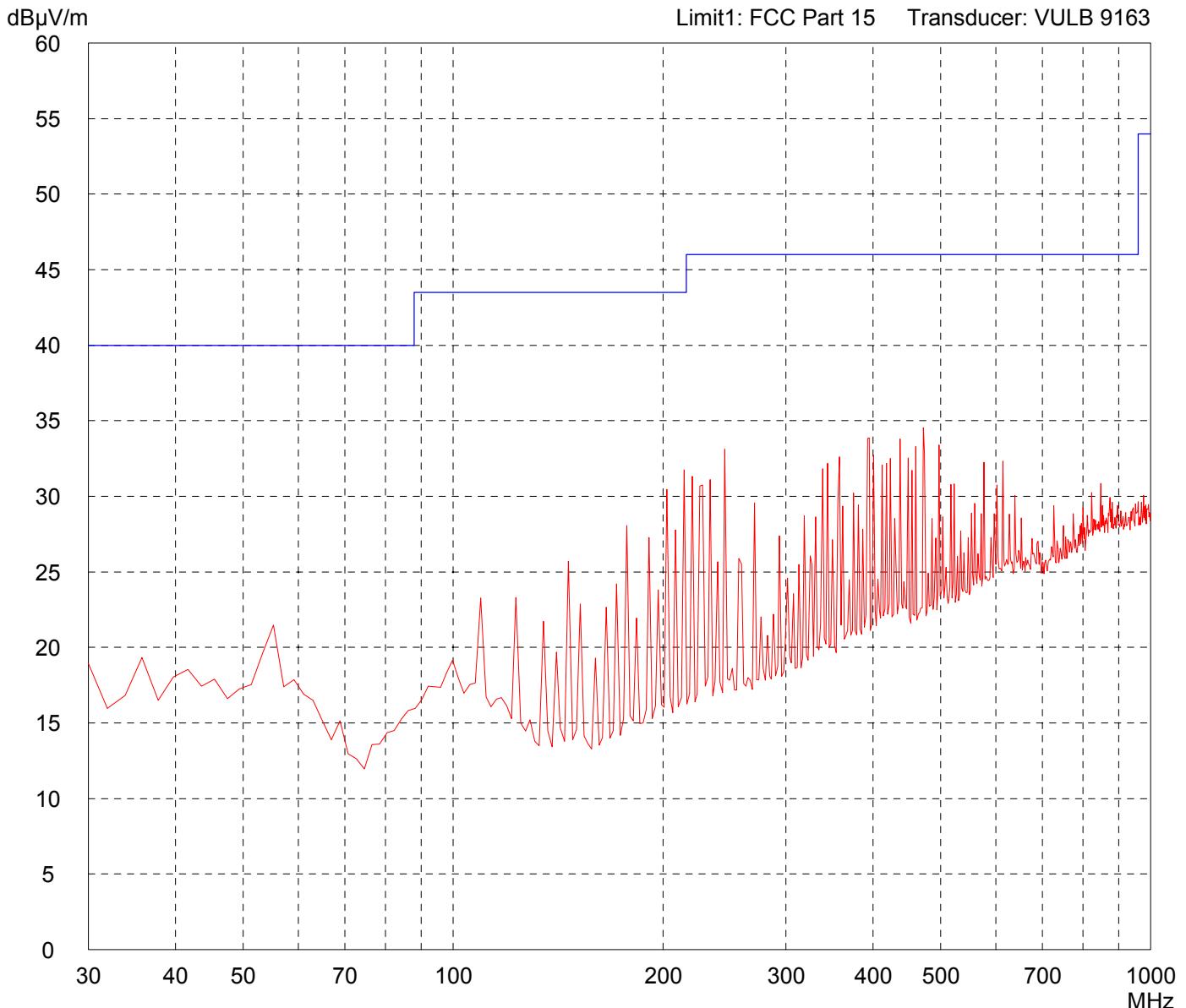
Radiated Emission Test 30 MHz - 1 GHz

acc. to FCC Part 15 (Fully Anechoic Chamber)

| | |
|---|---------------------------|
| Model: Model 1500 Audio TX & RX | Comment: |
| Serial no.: Transmitter | |
| Applicant: Amphony Deutschland GmbH | |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3 metres Horizontal Polarization | |
| Date of test: 08/11/2005 | Operator: J. Roidt |
| Test performed: automatically | File name: default.emi |

| |
|-------------------|
| Detector: Peak |
|-------------------|

List of values:
10 dB Margin 50 Subranges



| |
|-----------------------|
| Result: Limit kept |
|-----------------------|

| | |
|--------------------------------|-------------------|
| Project file: 50104-50463-1 | Page of Pages |
|--------------------------------|-------------------|

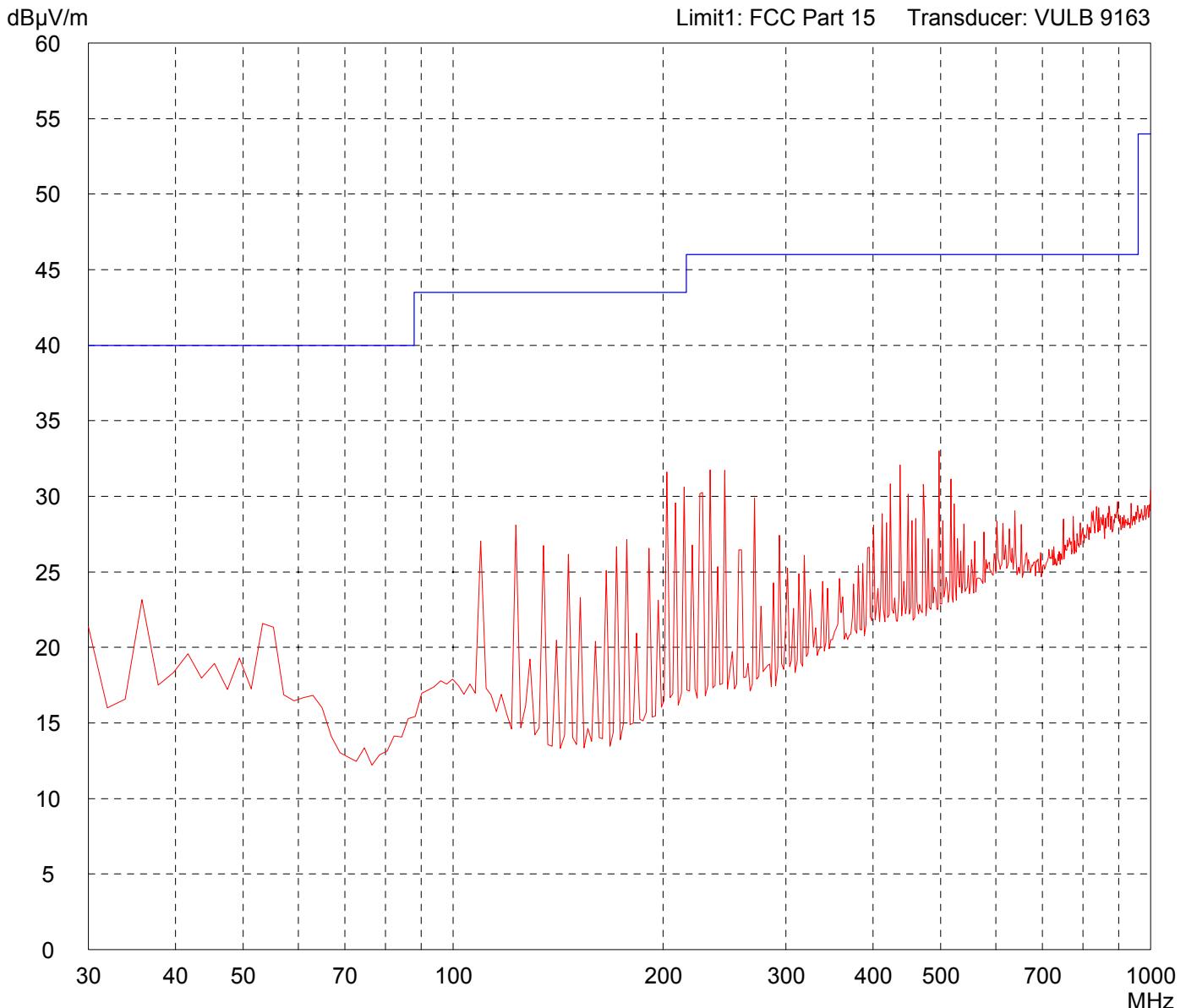
Radiated Emission Test 30 MHz - 1 GHz

acc. to FCC Part 15 (Fully Anechoic Chamber)

| | |
|---|---------------------------|
| Model: Model 1500 Audio TX & RX | Comment: |
| Serial no.: Transmitter | |
| Applicant: Amphony Deutschland GmbH | |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3 metres Vertical Polarization | |
| Date of test: 08/11/2005 | Operator: J. Roidt |
| Test performed: automatically | File name: default.emi |

| |
|-------------------|
| Detector: Peak |
|-------------------|

List of values:
10 dB Margin 50 Subranges



| |
|-----------------------|
| Result: Limit kept |
|-----------------------|

| | |
|--------------------------------|-------------------|
| Project file: 50104-50463-1 | Page of Pages |
|--------------------------------|-------------------|

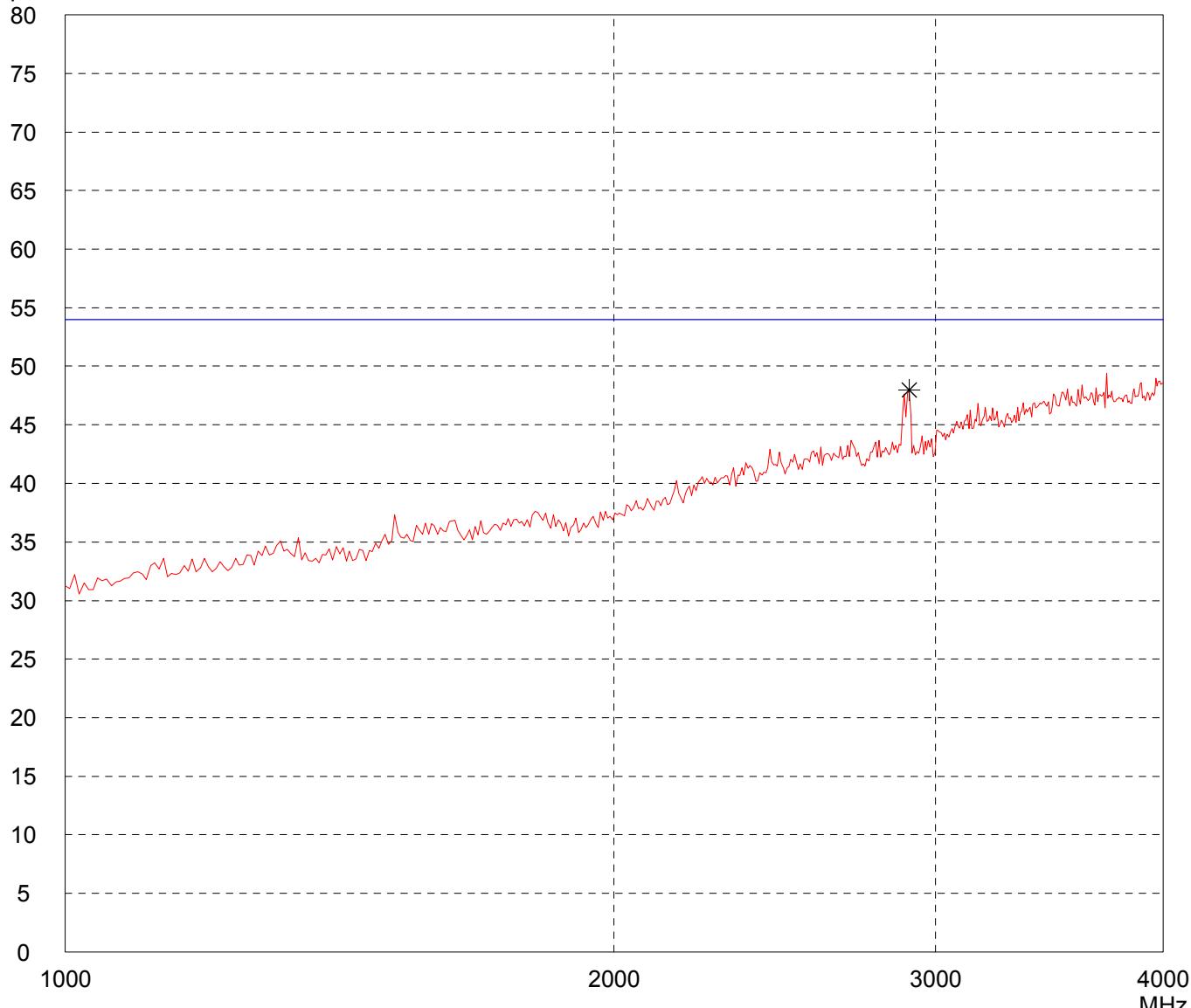
**Radiated Emission Test 1 GHz - 4 GHz
acc. to FCC Part 15 (Fully Anechoic Chamber)**

| | |
|---|---------------------------|
| Model: Model 1500 Audio TX & RX | Comment: |
| Serial no.: Transmitter | |
| Applicant: Amphony Deutschland GmbH | |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3 metres Horizontal Polarization | |
| Date of test: 08/11/2005 | Operator: J. Roidt |
| Test performed: automatically | File name: default.emi |

| | |
|-------------------|-------------------------------------|
| Detector: Peak | List of values: Selected by hand |
|-------------------|-------------------------------------|

dB μ V/m

Limit1: FCC Part 15 Transducer: VULB 9163



Result:
Limit kept

Project file:
50104-50463-1

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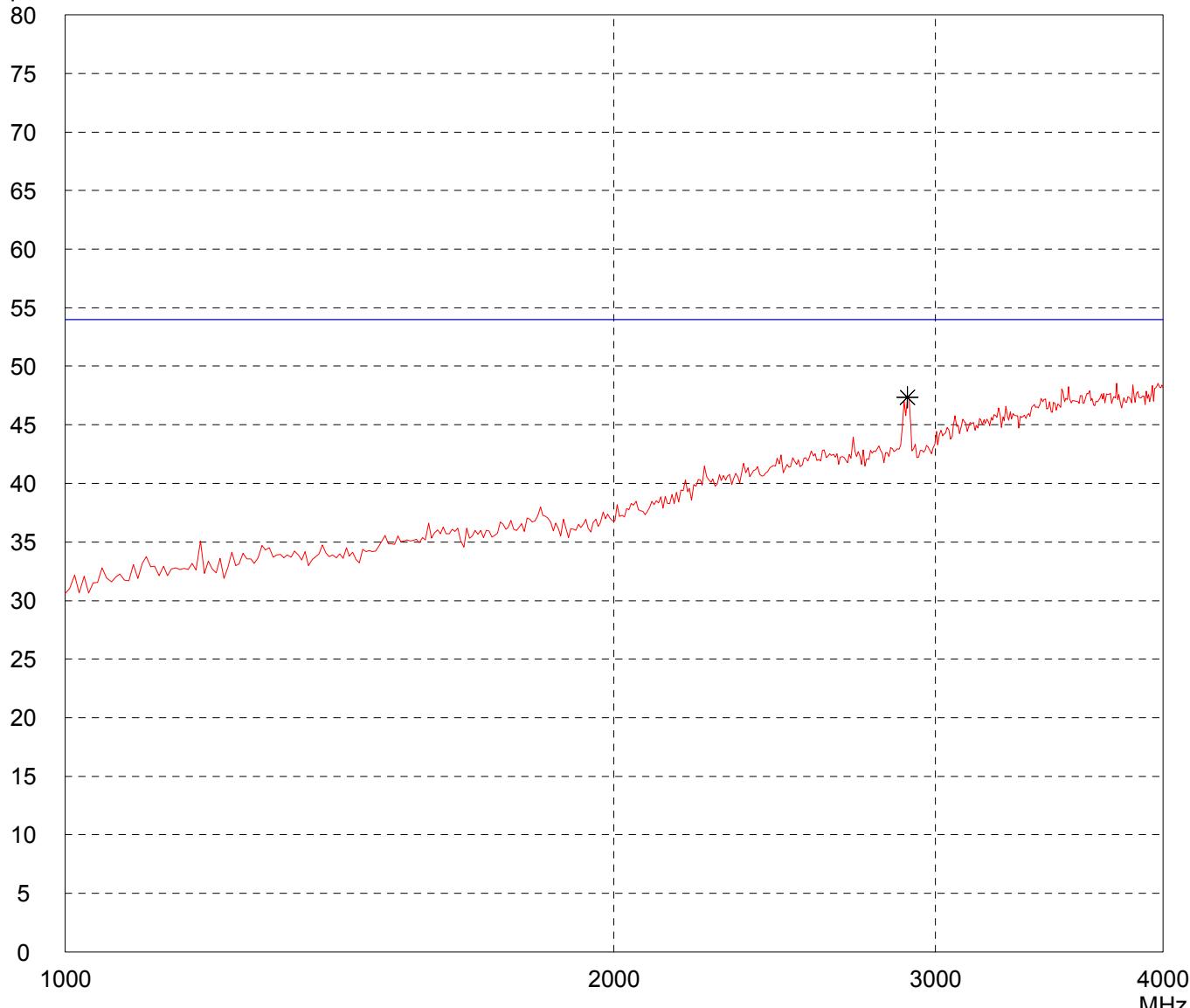
**Radiated Emission Test 1 GHz - 4 GHz
acc. to FCC Part 15 (Fully Anechoic Chamber)**

| | |
|---|---------------------------|
| Model: Model 1500 Audio TX & RX | Comment: |
| Serial no.: Transmitter | |
| Applicant: Amphony Deutschland GmbH | |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 3 metres Vertical Polarization | |
| Date of test: 08/11/2005 | Operator: J. Roidt |
| Test performed: automatically | File name: default.emi |

| | |
|-------------------|-------------------------------------|
| Detector: Peak | List of values: Selected by hand |
|-------------------|-------------------------------------|

dB μ V/m

Limit1: FCC Part 15 Transducer: VULB 9163



Result:
Limit kept

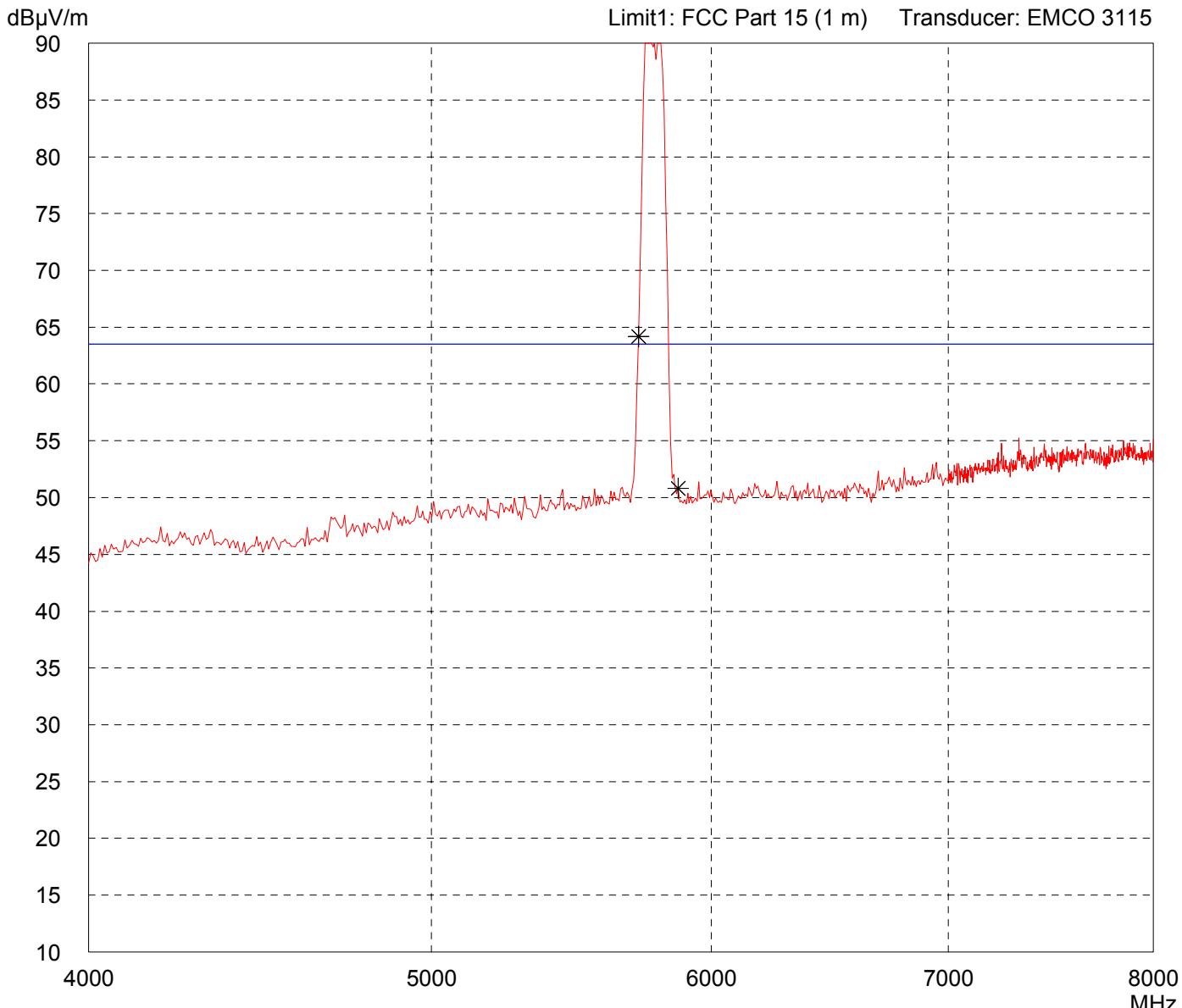
Project file:
50104-50463-1

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Radiated Emission Test 4 GHz - 8 GHz acc. to FCC Part 15 (Fully Anechoic Chamber)

| | |
|--|---------------------------|
| Model: Model 1500 Audio TX & RX | Comment: |
| Serial no.: Transmitter | |
| Applicant: Amphony Deutschland GmbH | |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 1 metre Horizontal Polarization | |
| Date of test: 08/11/2005 | Operator: J. Roidt |
| Test performed: automatically | File name: default.emi |

| | |
|-------------------|-------------------------------------|
| Detector: Peak | List of values: Selected by hand |
|-------------------|-------------------------------------|



| |
|-----------------------|
| Result: Limit kept |
|-----------------------|

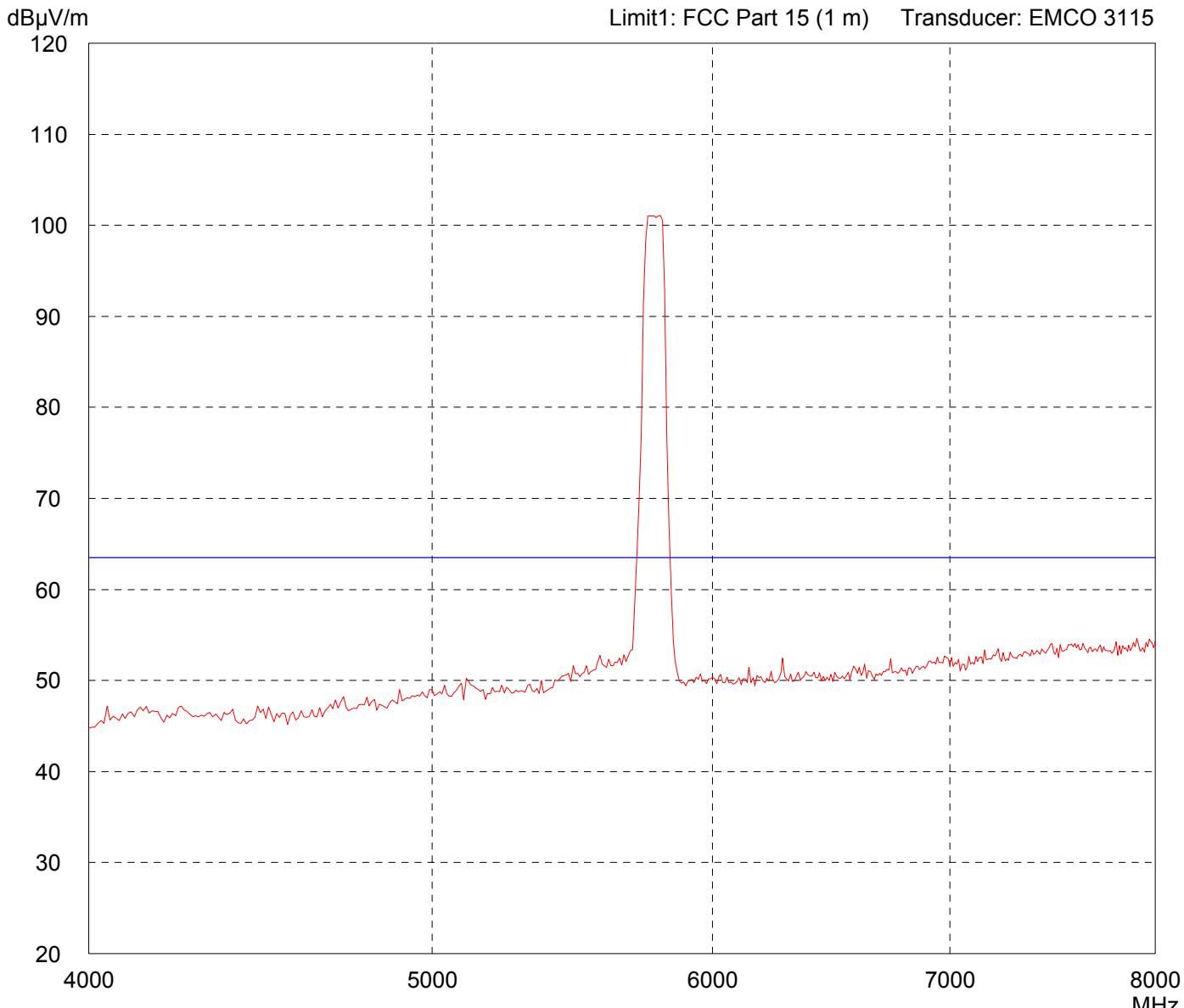
| | |
|--------------------------------|-------------------------|
| Project file: 50104-50463-1 | Page of Pages |
|--------------------------------|-------------------------|

Radiated Emission Test 4 GHz - 8 GHz acc. to FCC Part 15 (Fully Anechoic Chamber)

| | |
|--|---------------------------|
| Model: Model 1500 Audio TX & RX | Comment: |
| Serial no.: Transmitter | |
| Applicant: Amphony Deutschland GmbH | |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 1 metre Vertical Polarization | |
| Date of test: 08/11/2005 | Operator: J. Roidt |
| Test performed: automatically | File name: default.emi |

| |
|-------------------|
| Detector: Peak |
|-------------------|

| |
|----------|
| Comment: |
|----------|



| |
|-----------------------|
| Result: Limit kept |
|-----------------------|

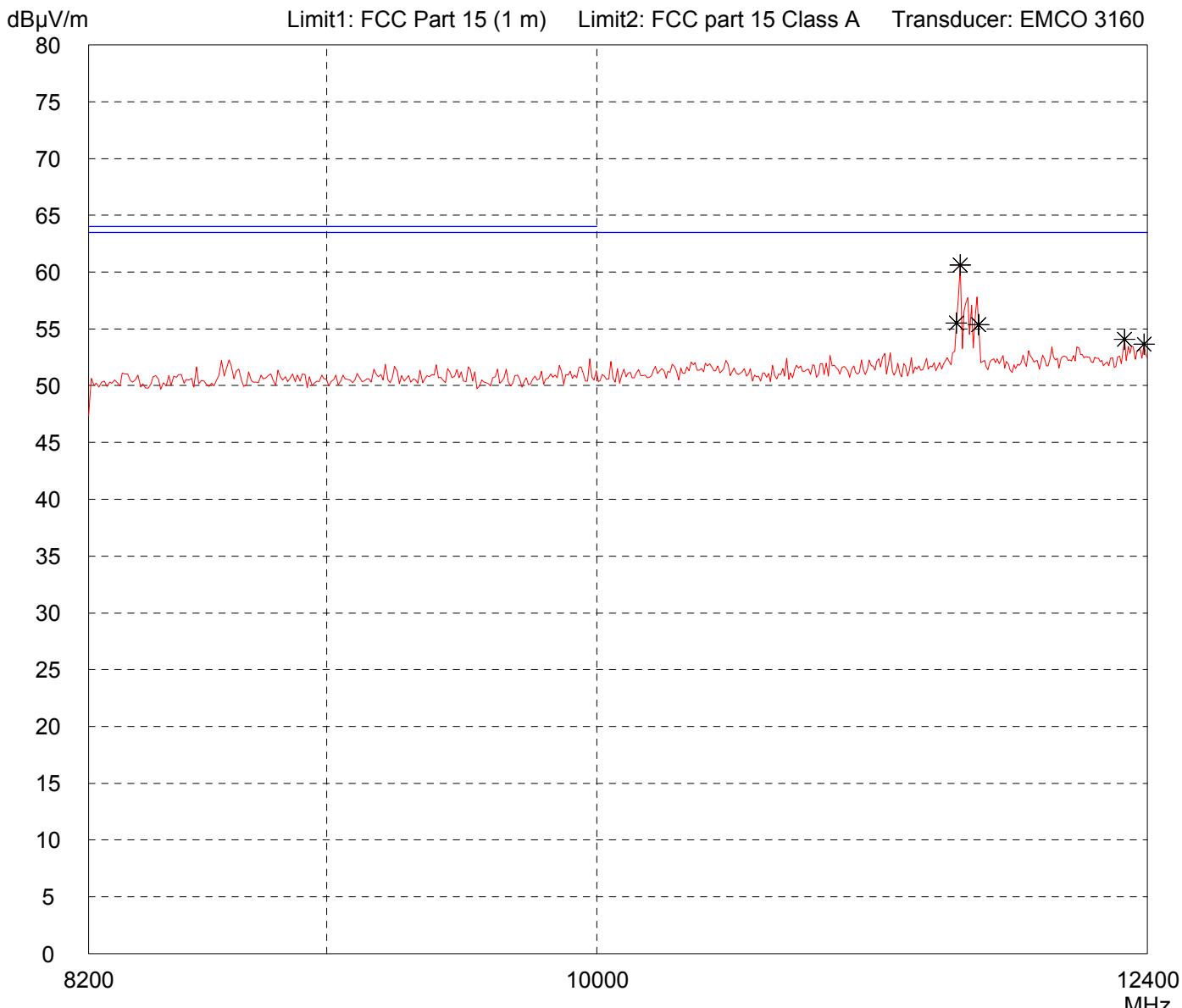
| | | | |
|--------------------------------|------|----|-------|
| Project file: 50104-50463-1 | Page | of | Pages |
|--------------------------------|------|----|-------|

Radiated Emission Test 8.2 GHz - 12.4 GHz acc. to FCC Part 15 (EMCO 3160)

| | |
|--|---------------------------|
| Model: Model 1500 Audio TX & RX | Comment: |
| Serial no.: Transmitter | |
| Applicant: Amphony Deutschland GmbH | |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 1 meter Horizontal Polarization | |
| Date of test: 08/11/2005 | Operator: J. Roidt |
| Test performed: automatically | File name: default.emi |

| |
|-------------------|
| Detector: Peak |
|-------------------|

List of values:
10 dB Margin 50 Subranges



| |
|-----------------------|
| Result: Limit kept |
|-----------------------|

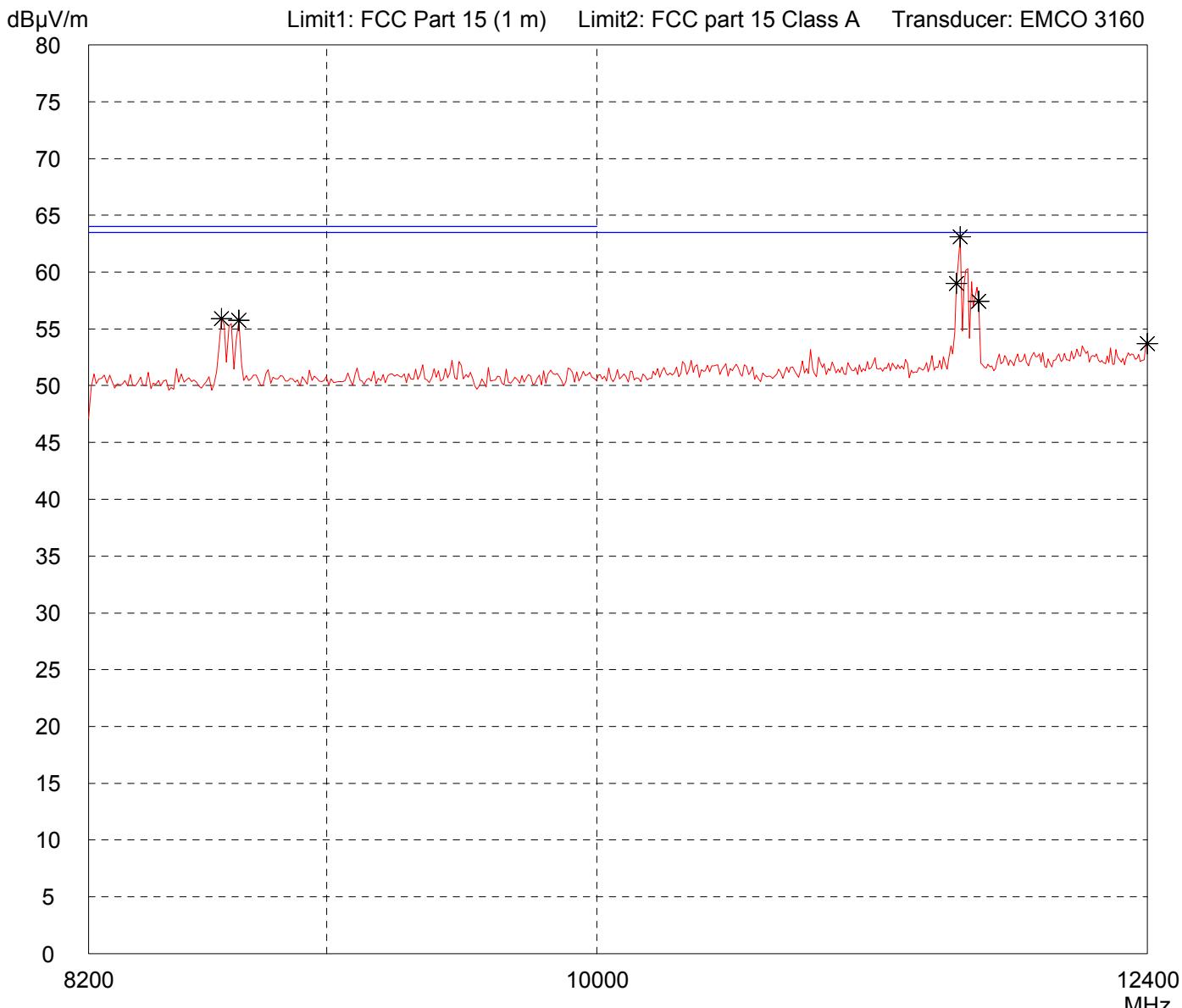
| | |
|--------------------------------|-------------------------|
| Project file: 50104-50463-1 | Page of Pages |
|--------------------------------|-------------------------|

Radiated Emission Test 8.2 GHz - 12.4 GHz acc. to FCC Part 15 (EMCO 3160)

| | |
|--|---------------------------|
| Model: Model 1500 Audio TX & RX | Comment: |
| Serial no.: Transmitter | |
| Applicant: Amphony Deutschland GmbH | |
| Test site: Fully anechoic room, cabin no. 2 | |
| Tested on: Test distance 1 meter Vertical Polarization | |
| Date of test: 08/11/2005 | Operator: J. Roidt |
| Test performed: automatically | File name: default.emi |

| |
|-------------------|
| Detector: Peak |
|-------------------|

List of values:
10 dB Margin 50 Subranges



| |
|-----------------------|
| Result: Limit kept |
|-----------------------|

Project file:
50104-50463-1

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Radiated Emission Test 12.4 GHz - 18 GHz acc. to FCC Part 15 (EMCO 3160)

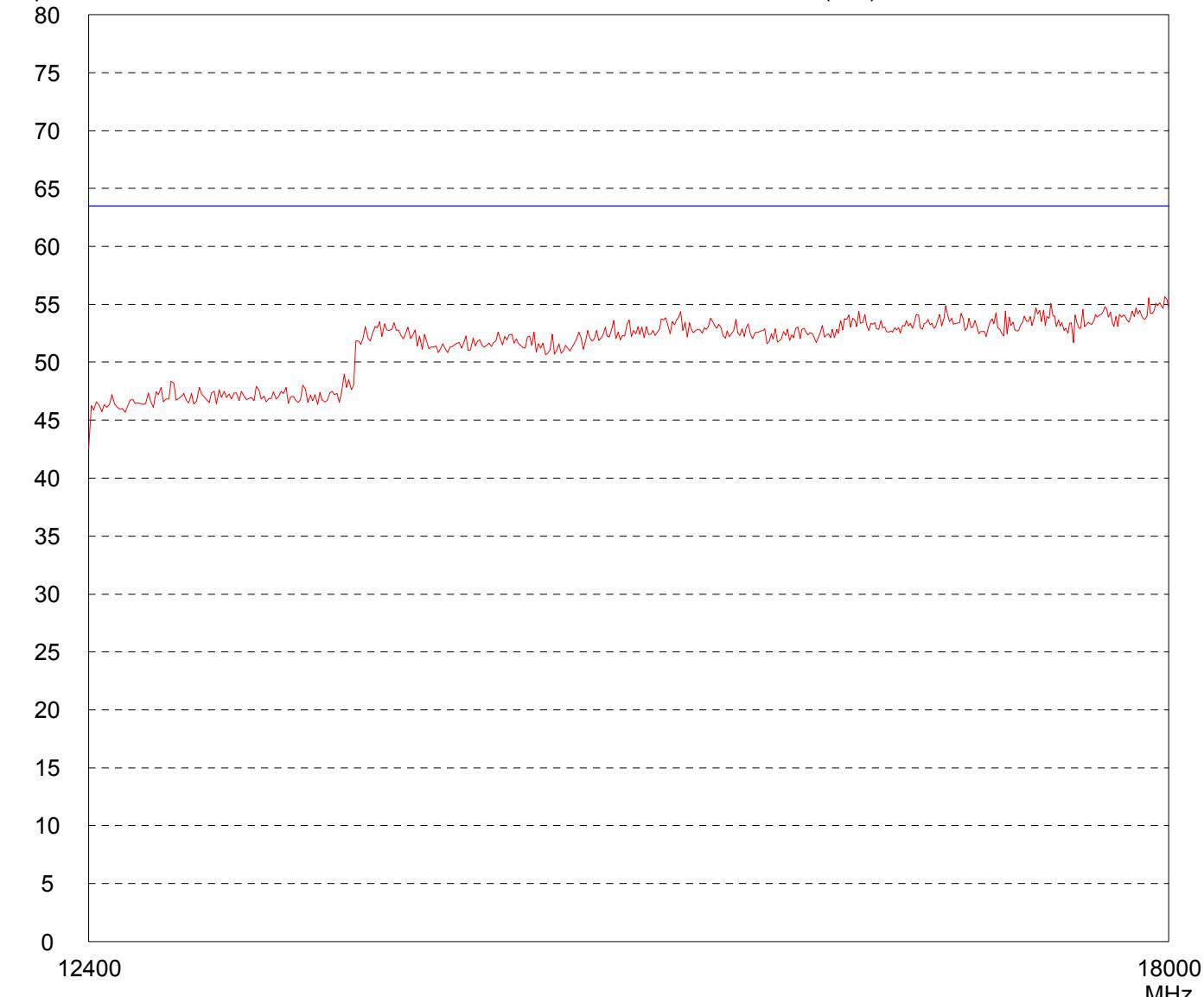
| | |
|----------------------------------|-------------|
| Model: | Comment: |
| Model 1500 Audio TX & RX | |
| Serial no.: | |
| Transmitter | |
| Applicant: | |
| Amphony Deutschland GmbH | |
| Test site: | |
| Fully anechoic room, cabin no. 2 | |
| Tested on: | |
| Test distance 1 meter | |
| Horizontal Polarization | |
| Date of test: | Operator: |
| 08/11/2005 | J. Roidt |
| Test performed: | File name: |
| by hand | default.emi |

Detector:
Peak

List of values:
Selected by hand

dB μ V/m
80

Limit1: FCC Part 15 (1 m) Transducer: EMCO 3160



Result:
Limit kept

Project file:
50104-50463-1

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Radiated Emission Test 12.4 GHz - 18 GHz acc. to FCC Part 15 (EMCO 3160)

| | |
|----------------------------------|-------------|
| Model: | Comment: |
| Model 1500 Audio TX & RX | |
| Serial no.: | |
| Transmitter | |
| Applicant: | |
| Amphony Deutschland GmbH | |
| Test site: | |
| Fully anechoic room, cabin no. 2 | |
| Tested on: | |
| Test distance 1 meter | Operator: |
| Vertical Polarization | J. Roidt |
| Date of test: | File name: |
| 08/11/2005 | default.emi |
| Test performed: | |
| by hand | |

Detector:
Peak

List of values:
Selected by hand

dB μ V/m

Limit1: FCC Part 15 (1 m) Transducer: EMCO 3160



Result:
Limit kept

Project file:
50104-50463-1

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Radiated Emissions Test

Model:
Model 1500

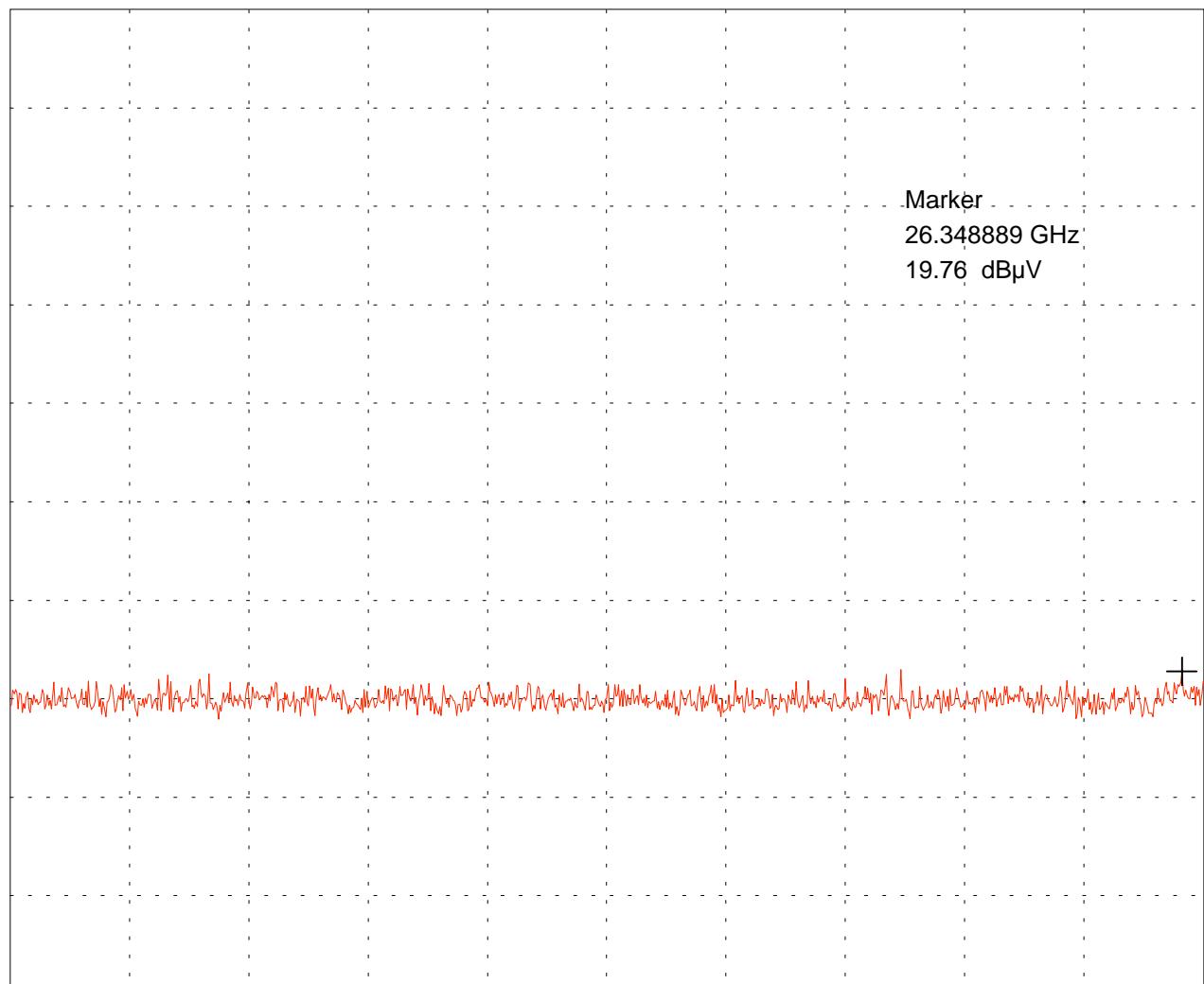
Serial No.:
Transmitter

Applicant:
Amphony Deutschland GmbH

Mode:

Ref.Level 87 dB μ V
10 dB/Div.

ATT 0 dB



Start 18.000 GHz
RBW 100 kHz

VBW 100 kHz

Stop 26.500 GHz
SWP 2.60 s

Tested by:
Johann Roidt

Date:
18 October 2005

Project-No.:
50104-050603

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Radiated Emissions Test

Model:
Model 1500

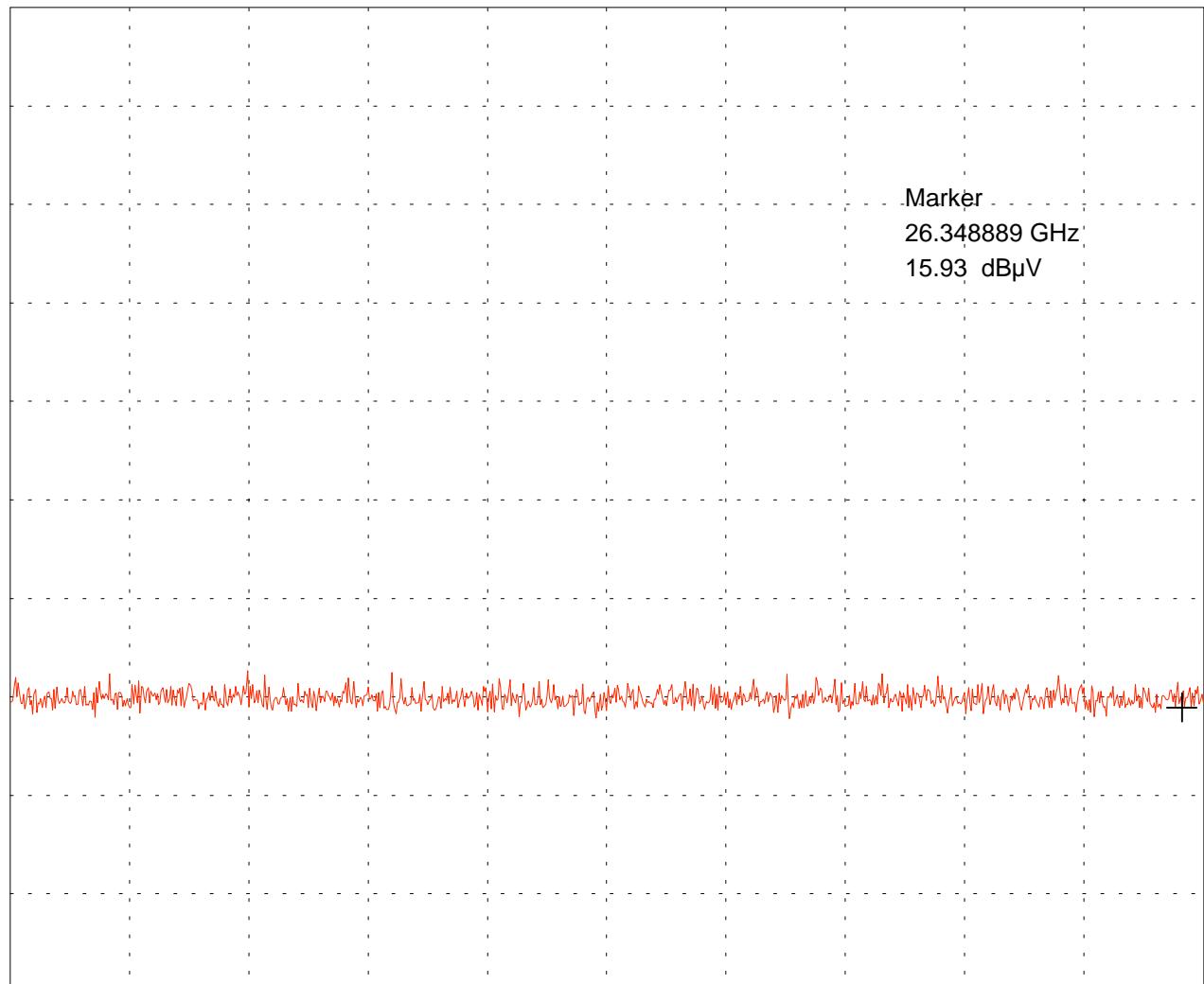
Serial No.:
Transmitter

Applicant:
Amphony Deutschland GmbH

Mode:

Ref.Level 87 dB μ V
10 dB/Div.

ATT 0 dB



Start 18.000 GHz
RBW 100 kHz

VBW 100 kHz

Stop 26.500 GHz
SWP 2.60 s

Tested by:
Johann Roidt

Date:
18 October 2005

Project-No.:
50104-050603

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Radiated Emissions Test

Model:
Model 1500

Serial No.:
Transmitter

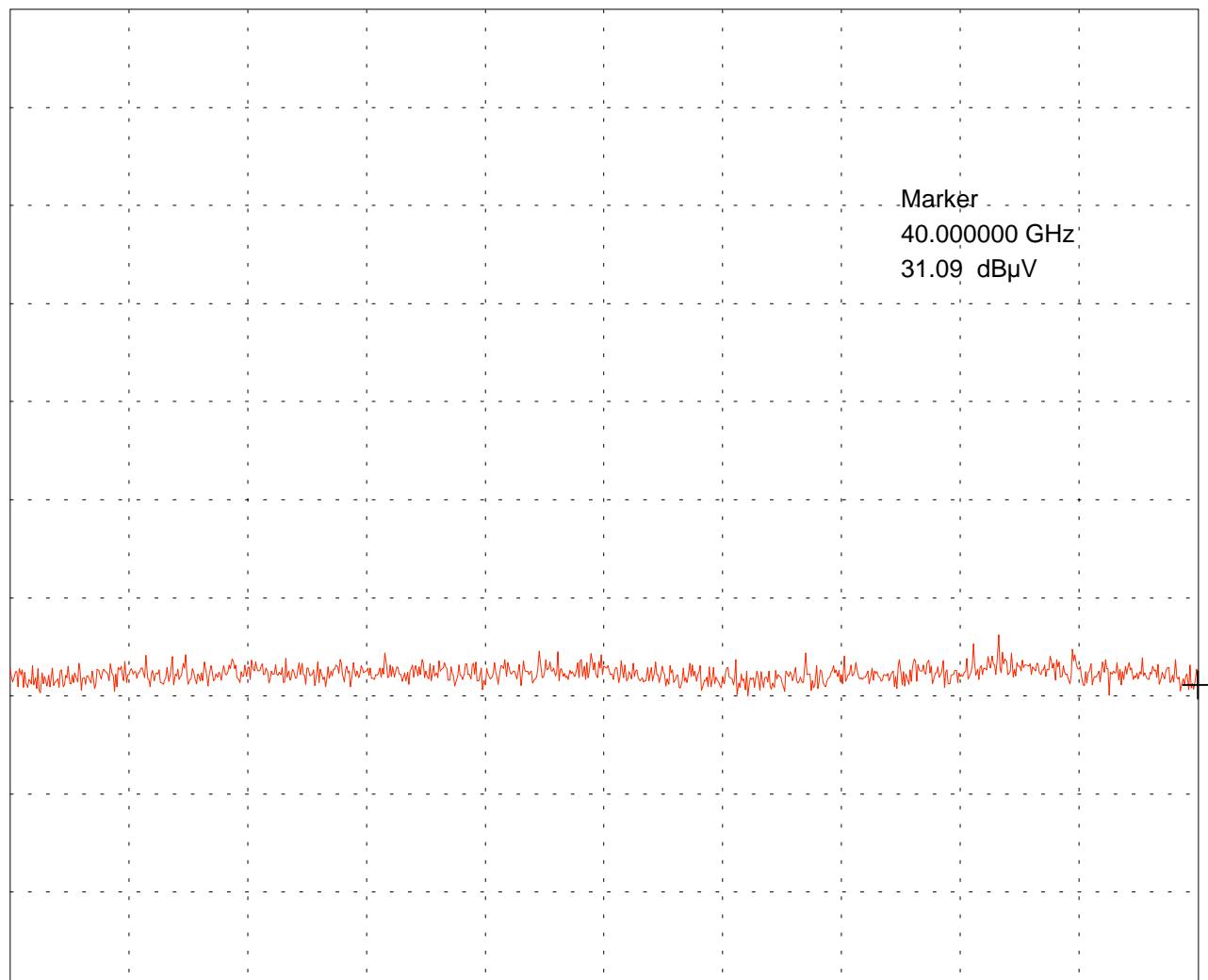
Applicant:
Amphony Deutschland GmbH

Mode:
- Horizontal Polarisation

Ref.Level 100 dB μ V
10 dB/Div.

ATT 0 dB

Ref. Offset 26 dB



Start 26.500 GHz
RBW 100 kHz

VBW 100 kHz

Stop 40.000 GHz
SWP 4.20 s

Tested by:
Johann Roidt

Date:
18 October 2005

Project-No.:
50104-050603

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Radiated Emissions Test

Model:
Model 1500

Serial No.:
Transmitter

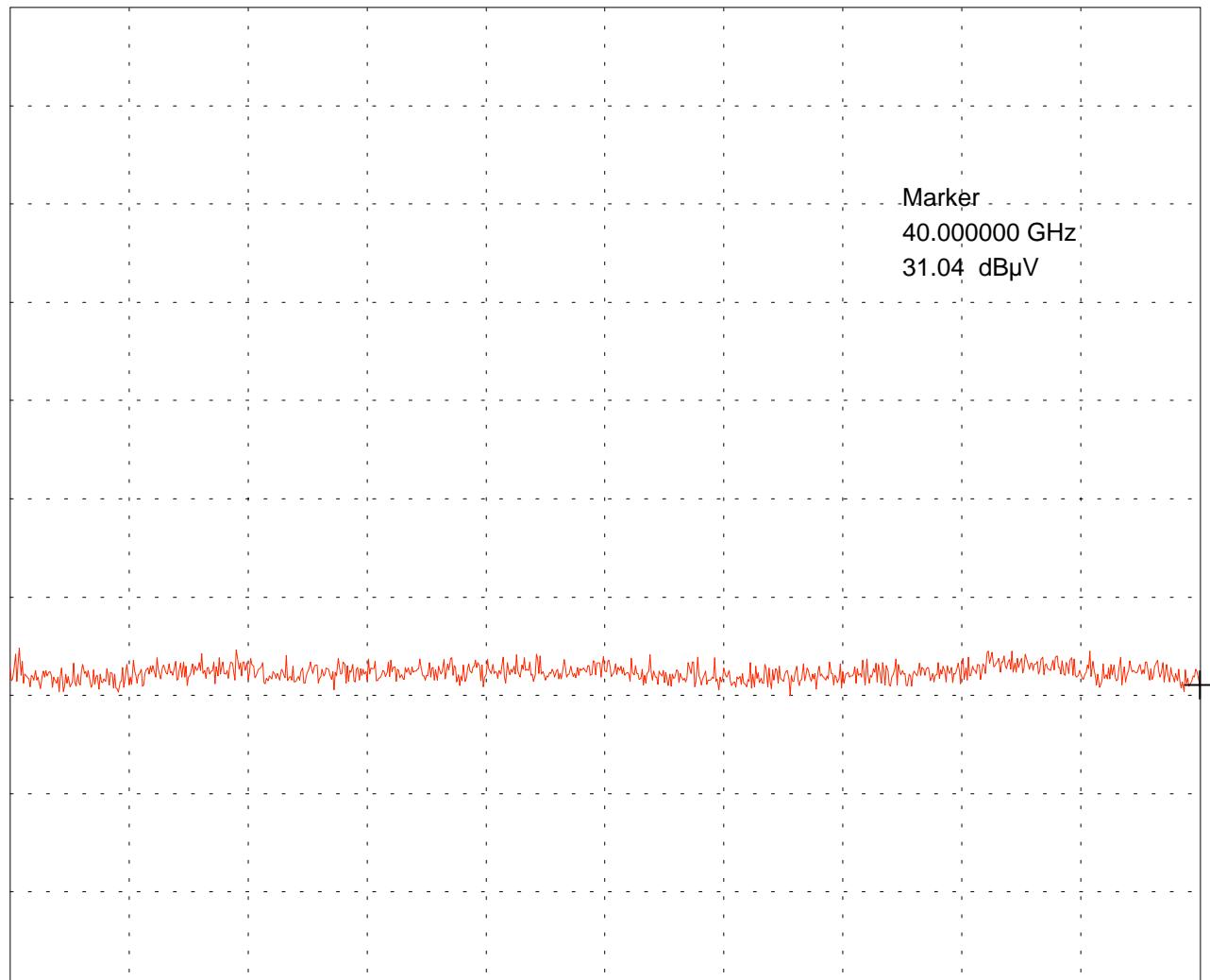
Applicant:
Amphony Deutschland GmbH

Mode:
- Vertical Polarisation

Ref.Level 100 dB μ V
10 dB/Div.

ATT 0 dB

Ref. Offset 26 dB



Start 26.500 GHz
RBW 100 kHz

VBW 100 kHz

Stop 40.000 GHz
SWP 4.20 s

Tested by:
Johann Roidt

Date:
18 October 2005

Project-No.:
50104-050603

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