# Spacelabs Medical

## Symbol LA-4137 installed in 91370

**October 18, 2005**

**Report No. SPAC0411**

Report Prepared By

NORTHWEST EMC

www.nwemc.com
1-888-EMI-CERT



EMC Test Report

NORTHWEST EMC

22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

# Certificate of Test

**Issue Date: October 18, 2005**
**Spacelabs Medical**
**Model: Symbol LA-4137 installed in 91370**

| Emissions | | | |
|---|---|---|---|
| **Specification** | **Test Method** | **Pass** | **Fail** |
| FCC 15.207 AC Powerline Conducted Emissions:2005-9 | ANSI C63.4:2003 | ☒ | ☐ |
| FCC 15.247(d) Spurious Radiated Emissions:2005-9 | ANSI C63.4:2003 | ☒ | ☐ |

| Modifications made to the product |
|---|
| See the Modifications section of this report |

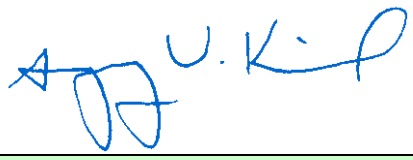
***Test Facility***

The measurement facility used to collect the data is located at:

Northwest EMC, Inc.
22975 NW Evergreen Parkway, Suite 400; Hillsboro, OR 97124
Phone: (503) 844-4066
Fax: 844-3826

This site has been fully described in a report filed with and accepted by the FCC (Federal Communications Commission) and Industry Canada.

**Approved By:**



*Greg Kiemel, Director of Engineering*

***This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government of the United States of America.***

***Product compliance is the responsibility of the client, therefore the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. This Report may only be duplicated in its entirety. The results of this test pertain only to the sample(s) tested, the specific description is noted in each of the individual sections of the test report supporting this certificate of test.***

| Revision Number | Description | Date | Page Number |
|---|---|---|---|
| 00 | None | | |

**FCC:** Accredited by NVLAP for performance of FCC radio, digital, and ISM device testing. Our Open Area Test Sites, certification chambers, and conducted measurement facilities have been fully described in reports filed with the FCC and accepted by the FCC in letters maintained in our files. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by the FCC as a Telecommunications Certification Body (TCB). This allows Northwest EMC to certify transmitters to FCC specifications in accordance with 47 CFR 2.960 and 2.962.

**NVLAP:** Northwest EMC, Inc. is recognized under the United States Department of Commerce, National Institute of Standards and Technology, and National Voluntary Laboratory Accreditation Program for satisfactory compliance with the requirements of ISO/IEC 17025 for Testing Laboratories. The NVLAP accreditation encompasses Electromagnetic Compatibility Testing in accordance with the European Union EMC Directive 89/336/EEC, ANSI C63.4, MIL-STD 461E, DO-160D and SAE J1113. Additionally, Northwest EMC is accredited by NVLAP to perform radio testing in accordance with the European Union R&TTE Directive 1999/5/EEC, the requirements of FCC, and the RSS radio standards for Industry Canada.

200629-0
200630-0
200676-0

**Industry Canada:** Accredited by NVLAP for performance of Industry Canada RSS and ICES testing. Our Open Area Test Sites and certification chambers comply with RSS 212, Issue 1 (Provisional) and have been filed with Industry Canada and accepted. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by NIST and recognized by Industry Canada as a Certification Body (CB) per the APEC Mutual Recognition Arrangement (MRA). This allows Northwest EMC to certify transmitters to Industry Canada technical requirements.

**CAB:** Designated by NIST and validated by the European Commission as a Conformity Assessment Body (CAB) to conduct tests and approve products to the EMC directive and transmitters to the R&TTE directive, as described in the U.S. - EU Mutual Recognition Agreement.

**TÜV Product Service:** Included in TUV Product Service Group's Listing of Recognized Laboratories. It qualifies in connection with the TUV Certification after Recognition of Agent's Testing Program for the product categories and/or standards shown in TUV's current Listing of CARAT Laboratories, available from TUV. A certificate was issued to represent that this laboratory continues to meet TUV's CARAT Program requirements. Certificate No. USA0401C.

**TÜV Rheinland:** Authorized to carryout EMC tests by order and under supervision of TÜV Rheinland. This authorization is based on "Conditions for EMC-Subcontractors" of November 1992.

**NEMKO:** Assessed and accredited by NEMKO (Norwegian testing and certification body) for European emissions and immunity testing. As a result of NEMKO's laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification (Authorization No. ELA 119).

**Technology International:** Assessed in accordance with ISO Guide 25 defining the general international requirements for the competence of calibration and testing laboratories and with ITI assessment criteria LACO196. Based upon that assessment, Interference Technology International, Ltd., has granted approval for specifications implementing the EU Directive on EMC (89/336/EEC and amendments). The scope of the approval was provided on a Schedule of Assessment supplied with the certificate and is available upon request.

**Australia/New Zealand:** The National Association of Testing Authorities (NATA), Australia has been appointed by the ACA as an accreditation body to accredit test laboratories and competent bodies for EMC standards. Accredited test reports or assessments by competent bodies must carry the NATA logo. Test reports made by an overseas laboratory that has been accredited for the relevant standards by an overseas accreditation body that has a Mutual Recognition Agreement (MRA) with NATA are also accepted as technical grounds for product conformity. The report should be endorsed with the respective logo of the accreditation body (NVLAP).

**VCCI:** Accepted as an Associate Member to the VCCI, Acceptance No. 564. Conducted and radiated measurement facilities have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. *(Registration Numbers. - Hillsboro: C-1071 and R-1025, Irvine: C-2094 and R-1943, Newberg: C-1877 and R-1760, Sultan: R-871, C-1784 and R-1761).*

**BSMI:** Northwest EMC has been designated by NIST and validated by C-Taipei (BSMI) as a CAB to conduct tests as described in the APEC Mutual Recognition Agreement. License No.SL2-IN-E-1017.

**GOST:** Northwest EMC, Inc. has been assessed and accredited by the Russian Certification bodies Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC, to perform EMC and Hygienic testing for Information Technology Products. As a result of their laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification

## SCOPE

For details on the Scopes of our Accreditations, please visit:
http://www.nwemc.com/scope.asp

## What is measurement uncertainty?

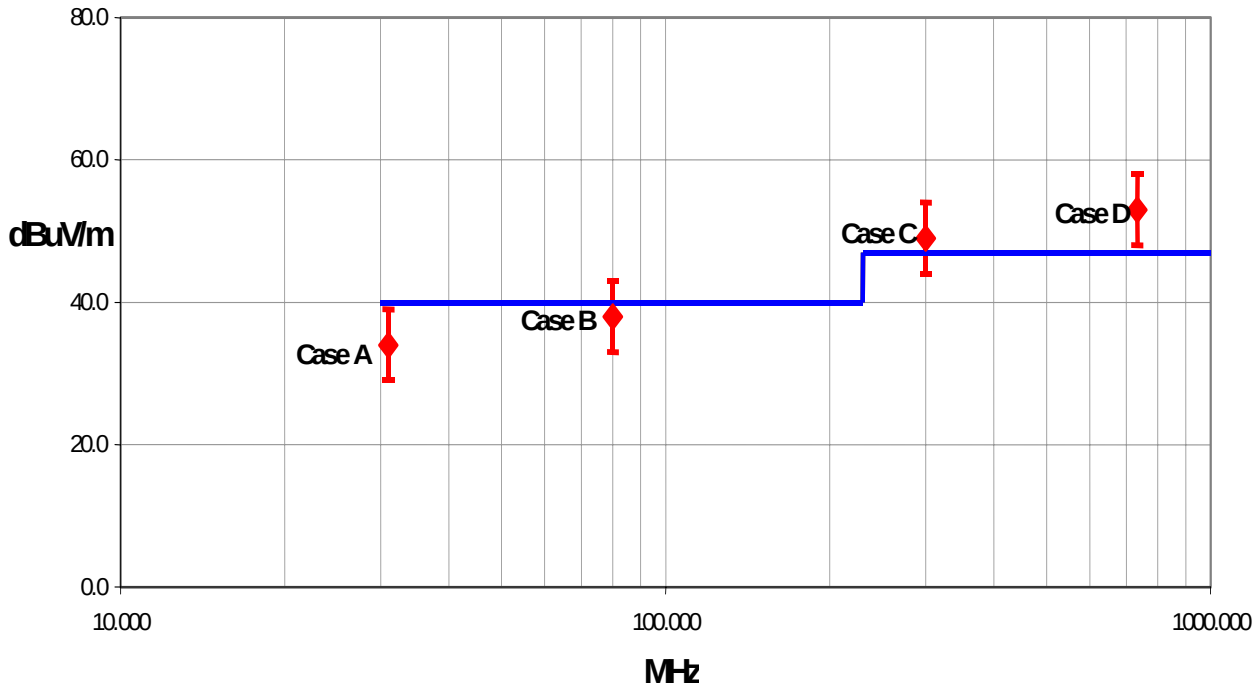
When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. The following statement of measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" value. In the case of transient tests (ESD, EFT, Surge, Voltage Dips and Interruptions), the test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements.

The following documents were the basis for determining the uncertainty levels of our measurements:

- "ISO Guide to the Expression of Uncertainty in Measurements", October 1993
- "NIS81: The Treatment of Uncertainty in EMC Measurements", May 1994
- "IEC CISPR 16-3 A1 f1 Ed.1: Radio-interference measurements and statistical techniques", December 2000

## How might measurement uncertainty be applied to test results?

If the diamond marks the measured value for the test and the vertical bars bracket the range of + and – measurement uncertainty, then test results can be interpreted from the diagram below.




| Test Result Scenarios: |
|---|
| **Case A:** Product complies. |
| **Case B:** Product conditionally complies. It is not possible to say with 95% confidence that the product complies. |
| **Case C:** Product conditionally does not comply. It is not possible to say with 95% confidence that the product does not comply. |
| **Case D:** Product does not comply. |

| **Radiated Emissions ≤ 1 GHz** | | Value (dB) | | | | | |
|---|---|---|---|---|---|---|---|
| | Probability Distribution | Biconical Antenna | | Log Periodic Antenna | | Dipole Antenna | |
| Test Distance | | 3m | 10m | 3m | 10m | 3m | 10m |
| Combined standard uncertainty $u_c(y)$ | normal | + 1.86<br>- 1.88 | + 1.82<br>- 1.87 | + 2.23<br>- 1.41 | + 1.29<br>- 1.26 | + 1.31<br>- 1.27 | + 1.25<br>- 1.25 |
| Expanded uncertainty ***U***<br>(level of confidence ≈ 95%) | normal (k=2) | + 3.72<br>- 3.77 | + 3.64<br>- 3.73 | + 4.46<br>-2.81 | + 2.59<br>- 2.52 | + 2.61<br>- 2.55 | + 2.49<br>- 2.49 |

| **Radiated Emissions > 1 GHz** | Value (dB) | | |
|---|---|---|---|
| | Probability Distribution | Without High Pass Filter | With High Pass Filter |
| Combined standard uncertainty $u_c(y)$ | normal | + 1.29<br>- 1.25 | + 1.38<br>- 1.35 |
| Expanded uncertainty ***U***<br>(level of confidence ≈ 95%) | normal (k=2) | + 2.57<br>- 2.51 | + 2.76<br>- -2.70 |

| **Conducted Emissions** | | |
|---|---|---|
| | Probability Distribution | Value (+/- dB) |
| Combined standard uncertainty ***uc(y)*** | normal | 1.48 |
| Expanded uncertainty ***U***<br>(level of confidence ≈ 95 %) | normal (k = 2) | 2.97 |

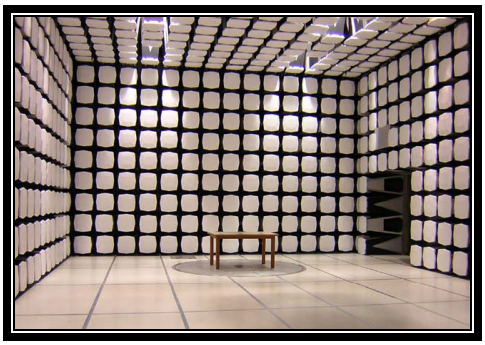
| **Radiated Immunity** | | |
|---|---|---|
| | Probability Distribution | Value (+/- dB) |
| Combined standard uncertainty ***uc(y)*** | normal | 1.05 |
| Expanded uncertainty ***U***<br>(level of confidence ≈ 95 %) | normal (k = 2) | 2.11 |

| **Conducted Immunity** | | |
|---|---|---|
| | Probability Distribution | Value (+/- dB) |
| Combined standard uncertainty ***uc(y)*** | normal | 1.05 |
| Expanded uncertainty ***U***<br>(level of confidence ≈ 95 %) | normal (k = 2) | 2.10 |

**Legend**

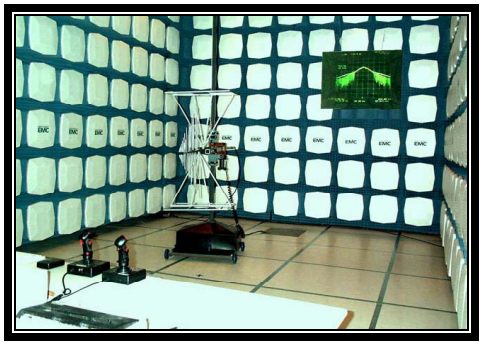
$u_c(y)$ = square root of the sum of squares of the individual standard uncertainties

***U*** = combined standard uncertainty multiplied by the coverage factor: **k**. This defines an interval about the measured result that will encompass the true value with a confidence level of approximately 95%. If a higher level of confidence is required, then k=3 (CL of 99.7%) can be used. Please note that with a coverage factor of one, uc(y) yields a confidence level of only 68%.

**California – Orange County Facility**
**Labs OC01 – OC13**

41 Tesla Ave. Irvine, CA 92618
(888) 364-2378 Fax: (503) 844-3826



**Oregon – Evergreen Facility**
**Labs EV01 – EV10**

22975 NW Evergreen Pkwy. Suite 400 Hillsboro, OR 97124
(503) 844-4066 Fax: (503) 844-3826

**Washington – Sultan Facility**
**Labs SU01 – SU07**

14128 339th Ave. SE Sultan, WA 98294
(888) 364-2378

| Party Requesting the Test | |
|---|---|
| **Company Name:** | Spacelabs Medical |
| **Address:** | PO Box 7018 |
| **City, State, Zip:** | Issaquah, WA 98027-7018 |
| **Test Requested By:** | Steve Cantwell |
| **Model:** | Symbol LA-4137 installed in 91370 |
| **First Date of Test:** | October 3, 2005 |
| **Last Date of Test:** | October 6, 2005 |
| **Receipt Date of Samples:** | September 23, 2005 |
| **Equipment Design Stage:** | Production |
| **Equipment Condition:** | No visual damage. |

## Information Provided by the Party Requesting the Test

| | |
|---|---|
| **Clocks/Oscillators:** | Not provided. |
| **I/O Ports:** | ECG, SDLC, Telecom, Video, Null Modem, LAN, USB |

| **Functional Description of the EUT (Equipment Under Test):** |
|---|
| Symbol's 802.11 radio module installed inside of Spacelabs 91370 display unit |

| **Client Justification for EUT Selection:** |
|---|
| Not Provided |

| **Client Justification for Test Selection:** |
|---|
| These tests satisfy the requirements for FCC Class II permissive change to approve the use of a new antenna with the Symbol radio module. |

| Equipment modifications | | | | | |
|---|---|---|---|---|---|
| Item | Test | Date | Modification | Note | Disposition of EUT |
| 1 | Spurious Radiated Emissions | 10/03/2005 | No EMI suppression devices were added or modified during this test. | Same configuration as delivered. | EUT remained at Northwest EMC. |
| 2 | AC Powerline Conducted Emissions | 10/06/2005 | No EMI suppression devices were added or modified during this test. | Same configuration as delivered. | EUT remained at Northwest EMC. |

## Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

| Channels in Specified Band Investigated: |
|---|
| High |
| Mid |
| Low |

| Operating Modes Investigated: |
|---|
| Typical |

| Data Rates Investigated: |
|---|
| 11Mbps |
| 1Mbps |

| Power Input Settings Investigated: |
|---|
| 120 VAC, 60 Hz. |

| Frequency Range Investigated | | | |
|---|---|---|---|
| **Start Frequency** | 30 MHz | **Stop Frequency** | 26 GHz |

| Software\Firmware Applied During Test | | | |
|---|---|---|---|
| **Exercise software** | HyperTerminal | **Version** | 1999 |
| Description | | | |
| The system was tested using special software to exercise the functions of the device during the testing including test type, antenna, channel, data rate, dwell time, pattern, and power. | | | |

| EUT and Peripherals | | | |
|---|---|---|---|
| **Description** | **Manufacturer** | **Model/Part Number** | **Serial Number** |
| Host Monitor | Spacelabs Medical | 91370 | 1370-PAR005 |
| EUT-802.11(b) Radio | Symbol | LA-4137 | Unknown |
| AC Adapter | Ault Inc. | MW116KA1800F03 | Unknown |
| Mouse | Logitech | M-BJ58 | PMA3466489 |

| Remote Equipment Outside of Test Setup Boundary | | | |
|---|---|---|---|
| **Description** | **Manufacturer** | **Model/Part Number** | **Serial Number** |
| Laptop | IBM | 2628 | 78-HKYY6 |
| **Equipment isolated from the EUT so as not to contribute to the measurement result is considered to be outside the test setup boundary** | | | |

| Cables | | | | | |
|---|---|---|---|---|---|
| **Cable Type** | **Shield** | **Length (m)** | **Ferrite** | **Connection 1** | **Connection 2** |
| ECG (splits into 10 leads | PA | 3.3 | PA | Host Monitor | Unterminated |
| DC Leads | Yes | 2.0 | Yes | Host Monitor | AC Mains |
| SDLC | Yes | 0.4 | Yes | Host Monitor | SDLC Termination |
| Telecom | No | 1.8 | No | Host Monitor | Unterminated |
| Video | Yes | 1.6 | Yes | Host Monitor | Unterminated |
| Null Modem | Yes | 3.0 | No | Host Monitor | Remote laptop |
| LAN | No | 2.0 | No | Host Monitor | Unterminated |
| USB (x2) | Yes | 1.0 | No | Host Monitor | Unterminated |
| USB | Yes | 1.2 | No | Host Monitor | USB Mouse |
| AC Power | No | 1.8 | No | AC Adapter | AC Mains |
| **PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.** | | | | | |

| Measurement Equipment | | | | | |
|---|---|---|---|---|---|
| **Description** | **Manufacturer** | **Model** | **Identifier** | **Last Cal** | **Interval** |
| Pre-Amplifier | Miteq | AM-1616-1000 | AOL | 08/02/2005 | 13 mo |
| Pre-Amplifier | Miteq | AMF-4D-010100-24-10P | APW | 08/02/2005 | 13 mo |
| Antenna, Biconilog | EMCO | 3141 | AXE | 12/03/2003 | 24 mo |
| Antenna, Horn | EMCO | 3115 | AHC | 08/30/2005 | 12 mo |
| Antenna, Horn | EMCO | 3160-08 | AHK | NCR | NA |
| Pre-Amplifier | Miteq | AMF-4D-005180-24-10P | APC | 02/17/2005 | 13 mo |
| High Pass Filter | Micro-Tronics | HPM50111 | HFO | 03/09/2005 | 13 mo |
| Spectrum Analyzer | Agilent | E4446A | AAQ | 06/15/2005 | 13 mo |
| Antenna, Horn | EMCO | 3160-09 | AHG | NCR | NA |
| Pre-Amplifier | Miteq | JSD4-18002600-26-8P | APU | 02/15/2005 | 13 mo |

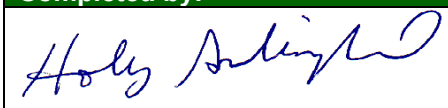
## Test Description

**Requirement:** The field strength of any spurious emissions or modulation products that fall in a restricted band, as defined in 47 CFR 15.205, is measured. The peak level must comply with the limits specified in 47 CFR 15.35(b). The average level (taken with a 10Hz VBW) must comply with the limits specified in 15.209.

**Configuration**: The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band transmit frequencies. For each configuration, the spectrum was scanned throughout the specified range. In addition, measurements were made in the restricted bands to verify compliance. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis, and adjusting the measurement antenna height and polarization (per ANSI C63.4:2003). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

| Bandwidths Used for Measurements | | | |
|---|---|---|---|
| **Frequency Range (MHz)** | **Peak Data (kHz)** | **Quasi-Peak Data (kHz)** | **Average Data (kHz)** |
| 0.01 – 0.15 | 1.0 | 0.2 | 0.2 |
| 0.15 – 30.0 | 10.0 | 9.0 | 9.0 |
| 30.0 – 1000 | 100.0 | 120.0 | 120.0 |
| Above 1000 | 1000.0 | N/A | 1000.0 |
| ***Measurements were made using the bandwidths and detectors specified. No video filter was used.*** | | | |

**Completed by:**



NORTHWEST EMC

# RADIATED EMISSIONS DATA SHEET

PSA 2005.9.18
EMI 2005.9.21

| | | | | | |
|---|---|---|---|---|---|
| EUT: | Symbol LA-4137 installed in 91370 | | | Work Order: | SPAC0411 |
| Serial Number: | Unknown | | | Date: | 10/03/05 |
| Customer: | Spacelabs Medical | | | Temperature: | 22 |
| Attendees: | None | | | Humidity: | 40% |
| Project: | None | | | Barometric Pressure | 29.99 |
| Tested by: | Holly Ashkannejhad | Power: | 120VAC/60Hz | Job Site: | EV01 |

| TEST SPECIFICATIONS | Test Method |
|---|---|
| FCC 15.247(d) Spurious Radiated Emissions:2005-04 | ANSI C63.4:2003 |

| TEST PARAMETERS | | | |
|---|---|---|---|
| Antenna Height(s) (m) | 1 - 4 | Test Distance (m) | 3 |

**COMMENTS**

Radio installed in 91370

**EUT OPERATING MODES**

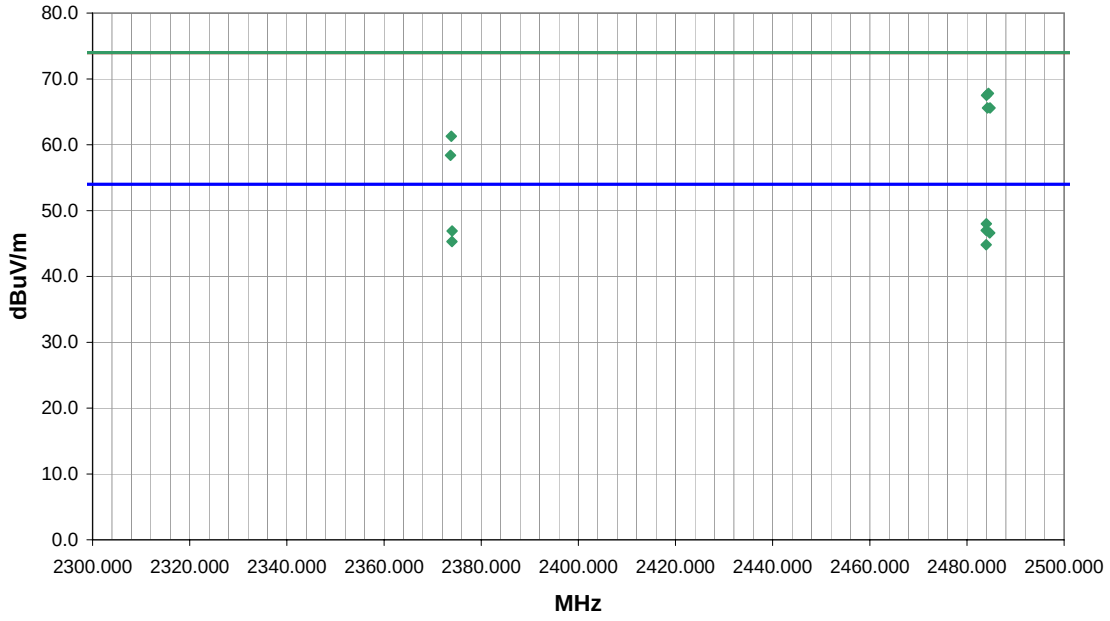
Transmitting high channel, see comments for data rate

**DEVIATIONS FROM TEST STANDARD**

No deviations.

| | |
|---|---|
| Run # | 1 |
| Configuration # | 1 |
| Results | Pass |

Signature Holly Ashkannejhad




| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Azimuth (degrees) | Height (meters) | Distance (meters) | External Attenuation (dB) | Polarity | Detector | Distance Adjustment (dB) | Adjusted dBuV/m | Spec. Limit dBuV/m | Compared to Spec. (dB) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2483.991 | 27.5 | 0.5 | 270.0 | 1.0 | 3.0 | 20.0 | V-Horn | AV | 0.0 | 48.0 | 54.0 | -6.0 | 1Mbps |
| 2484.421 | 47.3 | 0.5 | 259.0 | 1.0 | 3.0 | 20.0 | V-Horn | PK | 0.0 | 67.8 | 74.0 | -6.2 | 11Mbps |
| 2484.034 | 47.0 | 0.5 | 270.0 | 1.0 | 3.0 | 20.0 | V-Horn | PK | 0.0 | 67.5 | 74.0 | -6.5 | 1Mbps |
| 2483.945 | 26.5 | 0.5 | 259.0 | 1.0 | 3.0 | 20.0 | V-Horn | AV | 0.0 | 47.0 | 54.0 | -7.0 | 11Mbps |
| 2374.016 | 26.6 | 0.3 | 286.0 | 1.0 | 3.0 | 20.0 | V-Horn | AV | 0.0 | 46.9 | 54.0 | -7.1 | 11Mbps |
| 2484.692 | 26.1 | 0.5 | 36.0 | 1.4 | 3.0 | 20.0 | H-Horn | AV | 0.0 | 46.6 | 54.0 | -7.4 | 1Mbps |
| 2484.224 | 45.1 | 0.5 | 43.0 | 1.2 | 3.0 | 20.0 | H-Horn | PK | 0.0 | 65.6 | 74.0 | -8.4 | 11Mbps |
| 2484.740 | 45.1 | 0.5 | 36.0 | 1.4 | 3.0 | 20.0 | H-Horn | PK | 0.0 | 65.6 | 74.0 | -8.4 | 1Mbps |
| 2373.986 | 25.0 | 0.3 | 312.0 | 1.2 | 3.0 | 20.0 | H-Horn | AV | 0.0 | 45.3 | 54.0 | -8.7 | 11Mbps |
| 2483.961 | 24.3 | 0.5 | 43.0 | 1.2 | 3.0 | 20.0 | H-Horn | AV | 0.0 | 44.8 | 54.0 | -9.2 | 11Mbps |
| 2373.856 | 41.0 | 0.3 | 286.0 | 1.0 | 3.0 | 20.0 | V-Horn | PK | 0.0 | 61.3 | 74.0 | -12.7 | 11Mbps |
| 2373.668 | 38.1 | 0.3 | 312.0 | 1.2 | 3.0 | 20.0 | H-Horn | PK | 0.0 | 58.4 | 74.0 | -15.6 | 11Mbps |

NORTHWEST EMC

# RADIATED EMISSIONS DATA SHEET

PSA 2005.9.18
EMI 2005.9.21

| | | | | | |
|---|---|---|---|---|---|
| EUT: | Symbol LA-4137 installed in 91370 | | | Work Order: | SPAC0411 |
| Serial Number: | Unknown | | | Date: | 10/03/05 |
| Customer: | Spacelabs Medical | | | Temperature: | 22 |
| Attendees: | None | | | Humidity: | 40% |
| Project: | None | | | Barometric Pressure | 29.99 |
| Tested by: | Holly Ashkannejhad | Power: | 120VAC/60Hz | Job Site: | EV01 |

| TEST SPECIFICATIONS | Test Method |
|---|---|
| FCC 15.247(d) Spurious Radiated Emissions:2005-04 | ANSI C63.4:2003 |

**TEST PARAMETERS**

| | | | |
|---|---|---|---|
| Antenna Height(s) (m) | 1 - 4 | Test Distance (m) | 3 |

**COMMENTS**

**EUT OPERATING MODES**

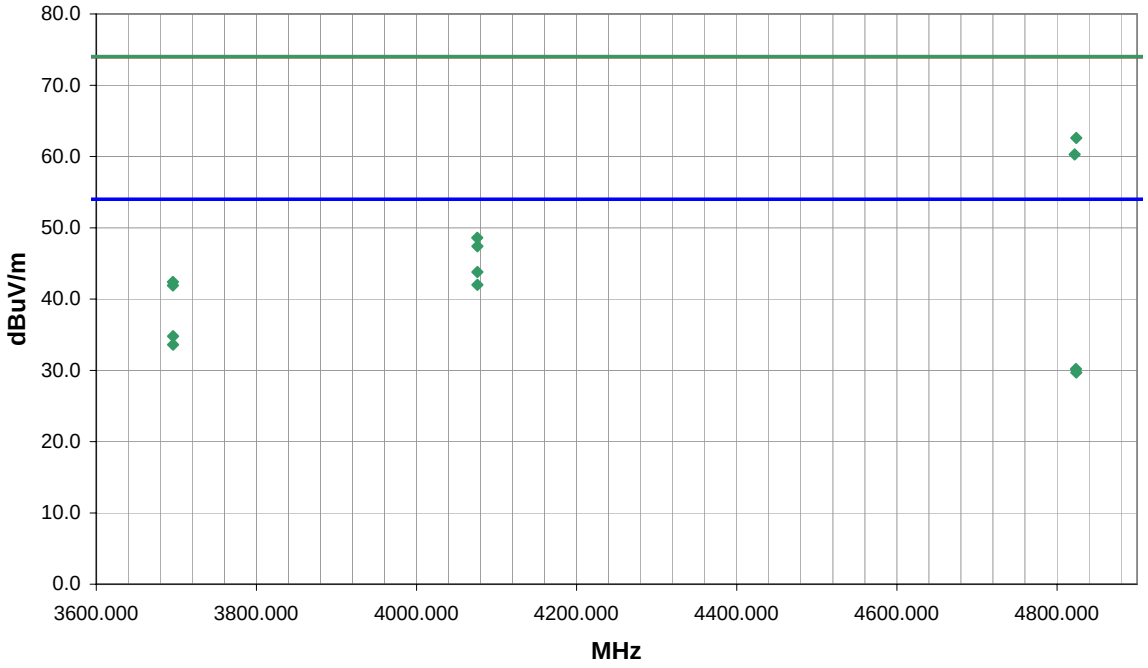
Transmitting low channel, 11Mbps

**DEVIATIONS FROM TEST STANDARD**

No deviations.

| | |
|---|---|
| Run # | 2 |
| Configuration # | 1 |
| Results | Pass |

Signature Holly Ashkannejhad




| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Azimuth (degrees) | Height (meters) | Distance (meters) | External Attenuation (dB) | Polarity | Detector | Distance Adjustment (dB) | Adjusted dBuV/m | Spec. Limit dBuV/m | Compared to Spec. (dB) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4075.954 | 38.0 | 5.8 | 307.0 | 1.0 | 3.0 | 0.0 | V-Horn | AV | 0.0 | 43.8 | 54.0 | -10.2 |
| 4823.961 | 56.2 | 6.4 | 221.0 | 1.0 | 3.0 | 0.0 | V-Horn | PK | 0.0 | 62.6 | 74.0 | -11.4 |
| 4076.050 | 36.2 | 5.8 | 238.0 | 2.8 | 3.0 | 0.0 | H-Horn | AV | 0.0 | 42.0 | 54.0 | -12.0 |
| 4822.152 | 53.9 | 6.4 | 268.0 | 2.9 | 3.0 | 0.0 | H-Horn | PK | 0.0 | 60.3 | 74.0 | -13.7 |
| 3696.003 | 30.2 | 4.6 | 247.0 | 1.2 | 3.0 | 0.0 | V-Horn | AV | 0.0 | 34.8 | 54.0 | -19.2 |
| 3695.959 | 29.0 | 4.6 | 276.0 | 1.2 | 3.0 | 0.0 | H-Horn | AV | 0.0 | 33.6 | 54.0 | -20.4 |
| 4823.644 | 23.8 | 6.4 | 221.0 | 1.0 | 3.0 | 0.0 | V-Horn | AV | 0.0 | 30.2 | 54.0 | -23.8 |
| 4823.960 | 23.3 | 6.4 | 268.0 | 2.9 | 3.0 | 0.0 | H-Horn | AV | 0.0 | 29.7 | 54.0 | -24.3 |
| 4075.780 | 42.8 | 5.8 | 307.0 | 1.0 | 3.0 | 0.0 | V-Horn | PK | 0.0 | 48.6 | 74.0 | -25.4 |
| 4076.083 | 41.6 | 5.8 | 238.0 | 2.8 | 3.0 | 0.0 | H-Horn | PK | 0.0 | 47.4 | 74.0 | -26.6 |
| 3695.636 | 37.8 | 4.6 | 276.0 | 1.2 | 3.0 | 0.0 | H-Horn | PK | 0.0 | 42.4 | 74.0 | -31.6 |
| 3695.738 | 37.3 | 4.6 | 247.0 | 1.2 | 3.0 | 0.0 | V-Horn | PK | 0.0 | 41.9 | 74.0 | -32.1 |

NORTHWEST EMC

# RADIATED EMISSIONS DATA SHEET

PSA 2005.9.18
EMI 2005.9.21

| | | | |
|---|---|---|---|
| EUT: | Symbol LA-4137 installed in 91370 | Work Order: | SPAC0411 |
| Serial Number: | Unknown | Date: | 10/03/05 |
| Customer: | Spacelabs Medical | Temperature: | 22 |
| Attendees: | None | Humidity: | 40% |
| Project: | None | Barometric Pressure | 29.99 |
| Tested by: | Holly Ashkannejhad | Power: 120VAC/60Hz | Job Site: EV01 |

| TEST SPECIFICATIONS | Test Method |
|---|---|
| FCC 15.247(d) Spurious Radiated Emissions:2005-04 | ANSI C63.4:2003 |

**TEST PARAMETERS**

| | | | |
|---|---|---|---|
| Antenna Height(s) (m) | 1 - 4 | Test Distance (m) | 3 |

**COMMENTS**

**EUT OPERATING MODES**

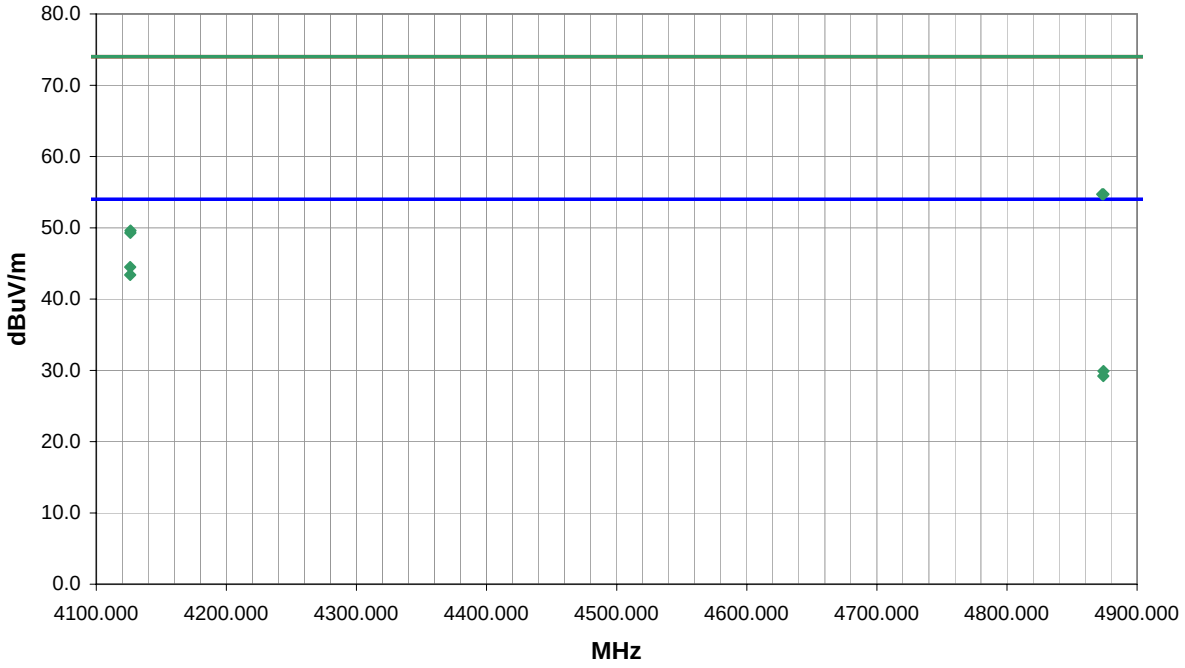
Transmitting mid channel, 11Mbps

**DEVIATIONS FROM TEST STANDARD**

No deviations.

| | |
|---|---|
| Run # | 3 |
| Configuration # | 1 |
| Results | Pass |

Signature Holly Ashkannejhad




| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Azimuth (degrees) | Height (meters) | Distance (meters) | External Attenuation (dB) | Polarity | Detector | Distance Adjustment (dB) | Adjusted dBuV/m | Spec. Limit dBuV/m | Compared to Spec. (dB) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4126.034 | 38.8 | 5.7 | 99.0 | 1.3 | 3.0 | 0.0 | H-Horn | AV | 0.0 | 44.5 | 54.0 | -9.5 |
| 4126.034 | 37.7 | 5.7 | 233.0 | 1.3 | 3.0 | 0.0 | V-Horn | AV | 0.0 | 43.4 | 54.0 | -10.6 |
| 4873.169 | 48.2 | 6.5 | 265.0 | 1.1 | 3.0 | 0.0 | H-Horn | PK | 0.0 | 54.7 | 74.0 | -19.3 |
| 4874.200 | 48.2 | 6.5 | 181.0 | 1.5 | 3.0 | 0.0 | V-Horn | PK | 0.0 | 54.7 | 74.0 | -19.3 |
| 4874.160 | 23.3 | 6.6 | 181.0 | 1.5 | 3.0 | 0.0 | V-Horn | AV | 0.0 | 29.9 | 54.0 | -24.1 |
| 4126.296 | 43.9 | 5.7 | 233.0 | 1.3 | 3.0 | 0.0 | V-Horn | PK | 0.0 | 49.6 | 74.0 | -24.4 |
| 4126.214 | 43.6 | 5.7 | 99.0 | 1.3 | 3.0 | 0.0 | H-Horn | PK | 0.0 | 49.3 | 74.0 | -24.7 |
| 4874.080 | 22.8 | 6.4 | 265.0 | 1.1 | 3.0 | 0.0 | H-Horn | AV | 0.0 | 29.2 | 54.0 | -24.8 |

NORTHWEST EMC

# RADIATED EMISSIONS DATA SHEET

PSA 2005.9.18
EMI 2005.9.21

| | | | | | |
|---|---|---|---|---|---|
| EUT: | Symbol LA-4137 installed in 91370 | | | Work Order: | SPAC0411 |
| Serial Number: | Unknown | | | Date: | 10/03/05 |
| Customer: | Spacelabs Medical | | | Temperature: | 22 |
| Attendees: | None | | | Humidity: | 40% |
| Project: | None | | | Barometric Pressure | 29.99 |
| Tested by: | Holly Ashkannejhad | Power: | 120VAC/60Hz | Job Site: | EV01 |

| TEST SPECIFICATIONS | Test Method |
|---|---|
| FCC 15.247(d) Spurious Radiated Emissions:2005-04 | ANSI C63.4:2003 |

| TEST PARAMETERS | | | |
|---|---|---|---|
| Antenna Height(s) (m) | 1 - 4 | Test Distance (m) | 3 |

**COMMENTS**

**EUT OPERATING MODES**

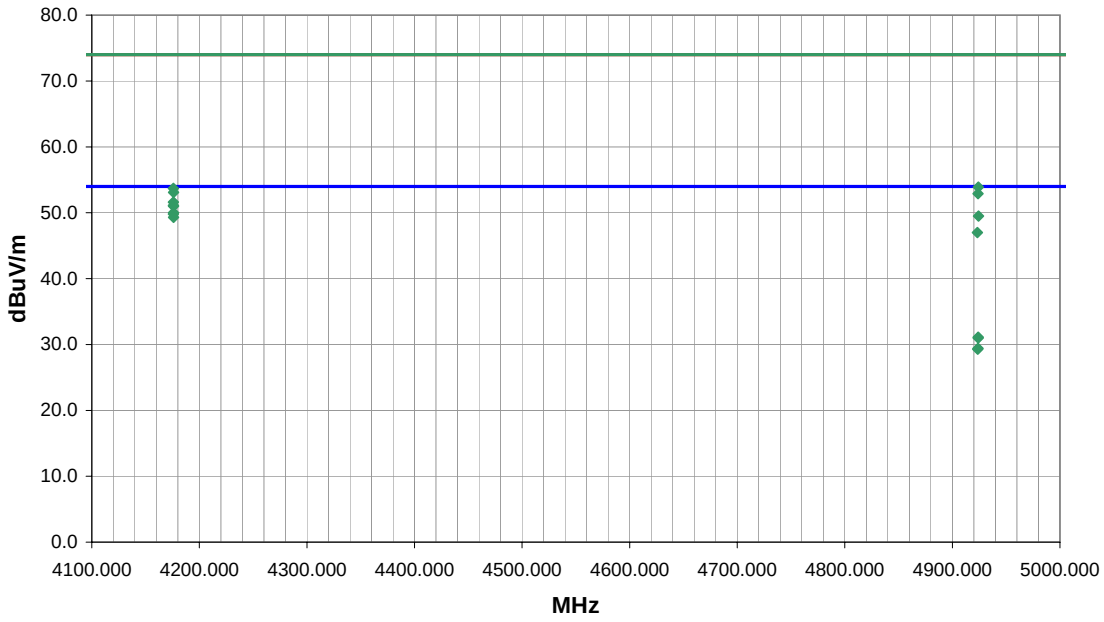
Transmitting high channel, see comments for data rate

**DEVIATIONS FROM TEST STANDARD**

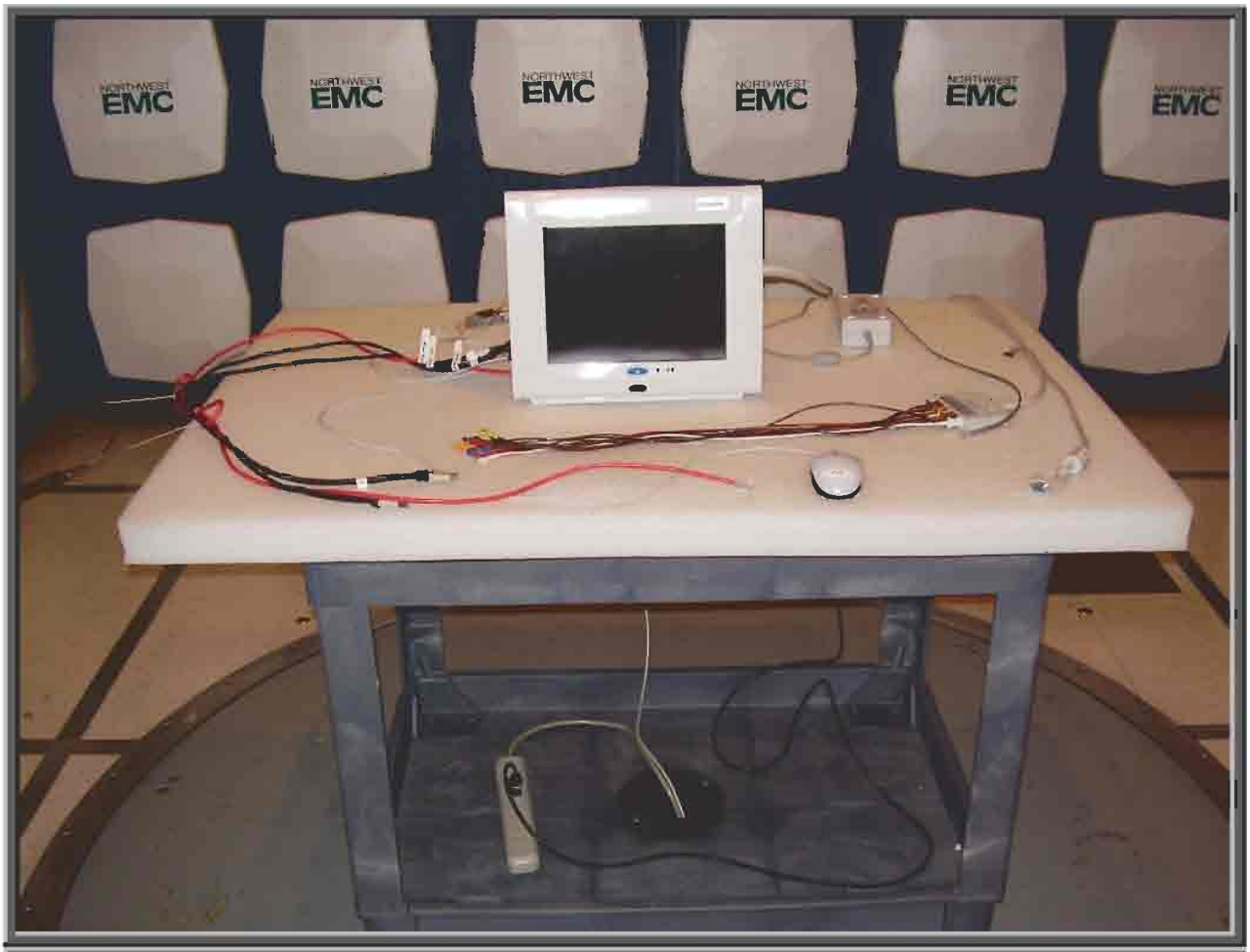
No deviations.

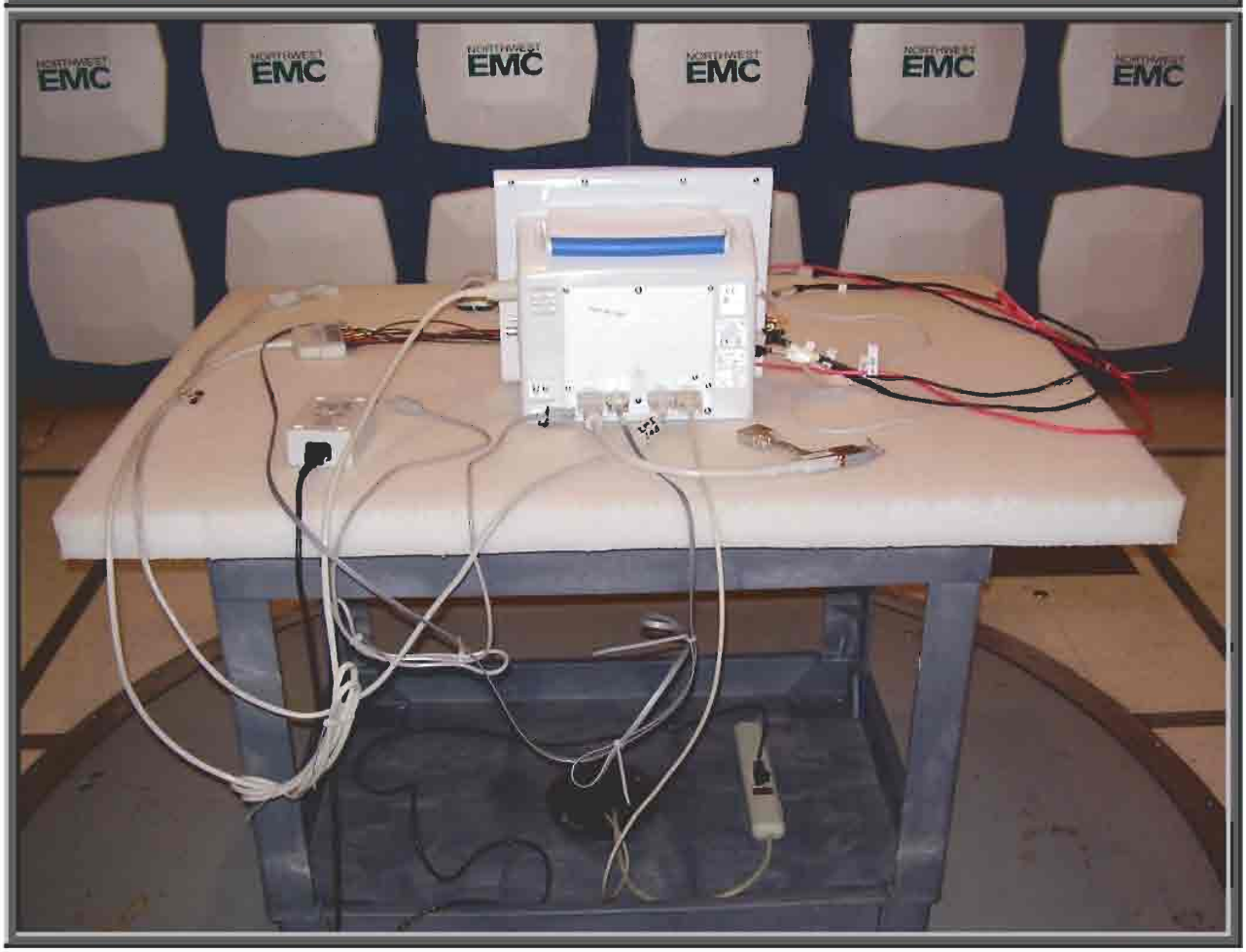
| | |
|---|---|
| Run # | 5 |
| Configuration # | 1 |
| Results | Pass |

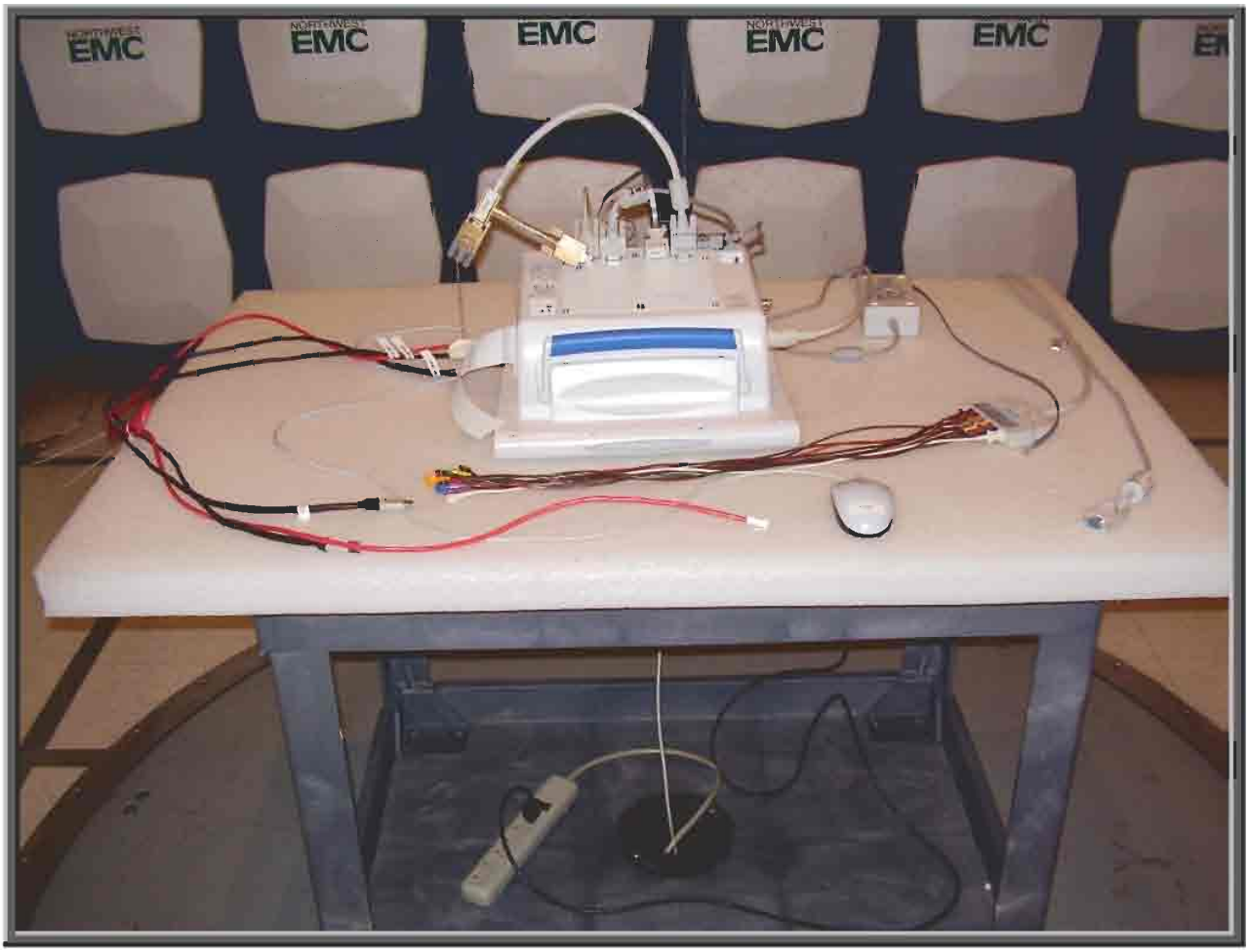
Signature

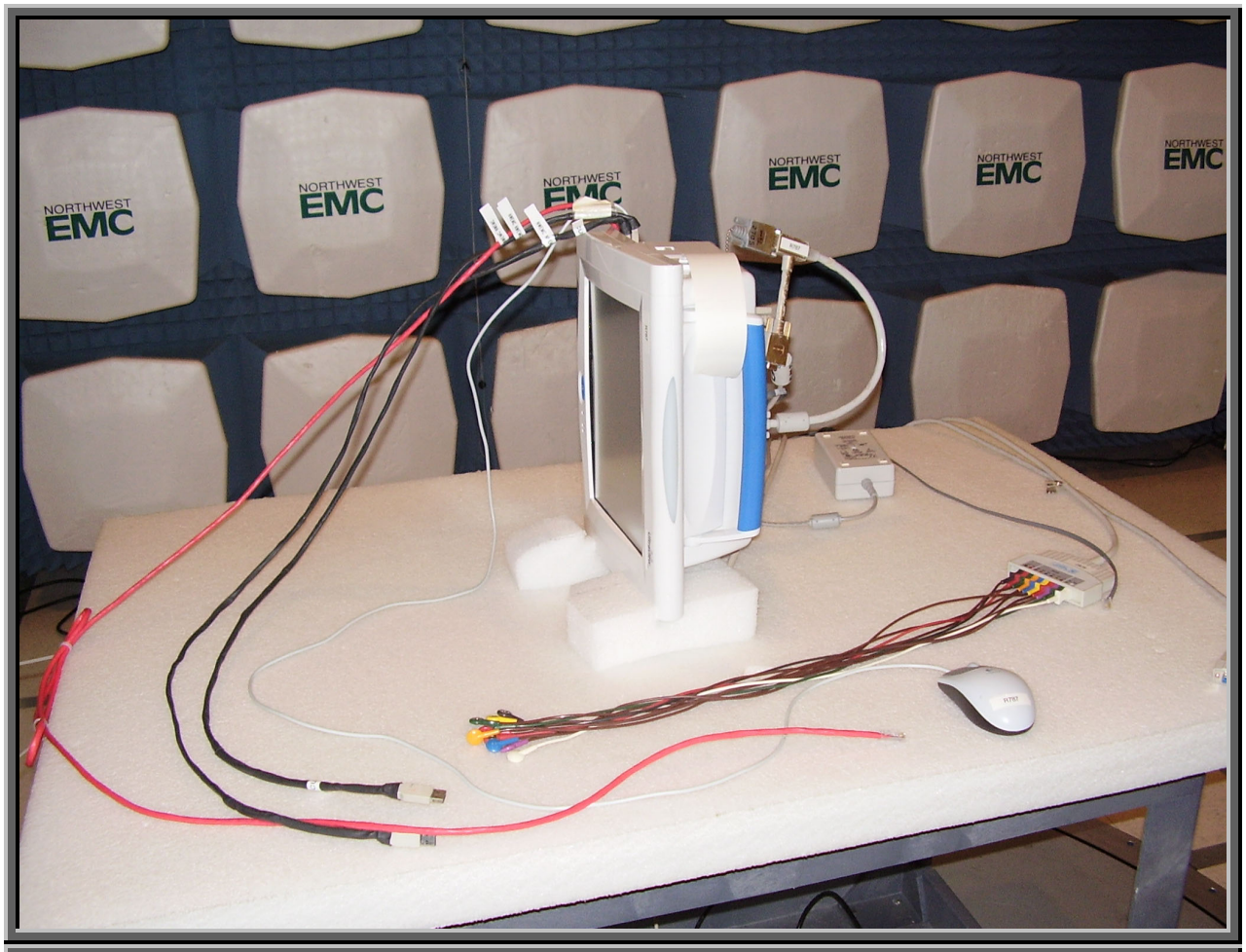


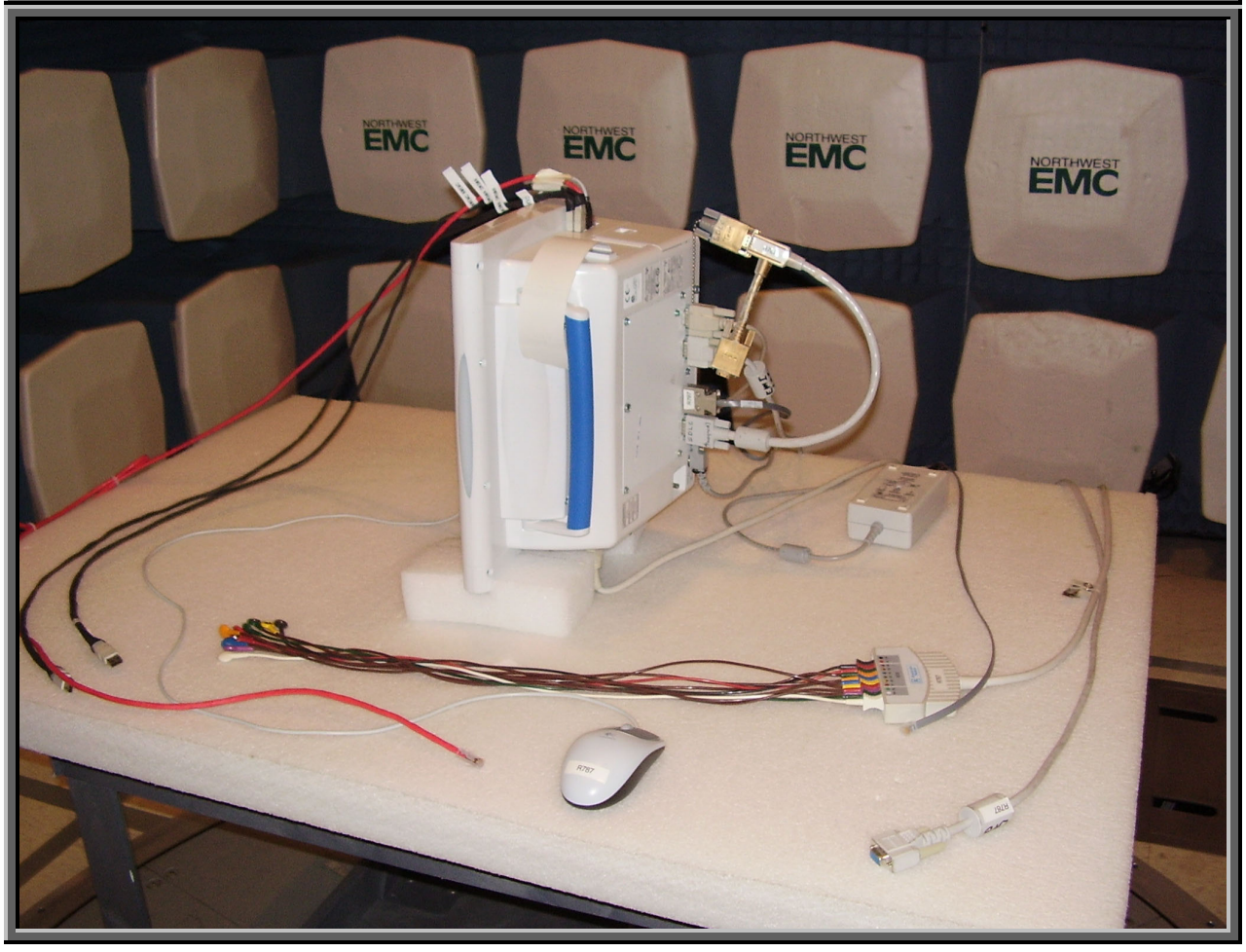

| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Azimuth (degrees) | Height (meters) | Distance (meters) | External Attenuation (dB) | Polarity | Detector | Distance Adjustment (dB) | Adjusted dBuV/m | Spec. Limit dBuV/m | Compared to Spec. (dB) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4176.015 | 45.3 | 5.7 | 211.0 | 1.2 | 3.0 | 0.0 | V-Horn | AV | 0.0 | 51.0 | 54.0 | -3.0 | 1Mbps |
| 4176.050 | 44.3 | 5.7 | 84.0 | 1.3 | 3.0 | 0.0 | H-Horn | AV | 0.0 | 50.0 | 54.0 | -4.0 | 1Mbps |
| 4175.921 | 44.1 | 5.7 | 191.0 | 1.2 | 3.0 | 0.0 | V-Horn | AV | 0.0 | 49.8 | 54.0 | -4.2 | 11Mbps |
| 4176.013 | 43.6 | 5.7 | 99.0 | 1.3 | 3.0 | 0.0 | H-Horn | AV | 0.0 | 49.3 | 54.0 | -4.7 | 11Mbps |
| 4924.180 | 47.2 | 6.7 | 203.0 | 1.0 | 3.0 | 0.0 | V-Horn | PK | 0.0 | 53.9 | 74.0 | -20.1 | 11Mbps |
| 4175.873 | 48.0 | 5.7 | 191.0 | 1.2 | 3.0 | 0.0 | V-Horn | PK | 0.0 | 53.7 | 74.0 | -20.3 | 11Mbps |
| 4176.061 | 47.4 | 5.7 | 211.0 | 1.2 | 3.0 | 0.0 | V-Horn | PK | 0.0 | 53.1 | 74.0 | -20.9 | 1Mbps |
| 4923.800 | 46.2 | 6.7 | 45.0 | 1.0 | 3.0 | 0.0 | H-Horn | PK | 0.0 | 52.9 | 74.0 | -21.1 | 11Mbps |
| 4175.800 | 45.9 | 5.7 | 99.0 | 1.3 | 3.0 | 0.0 | H-Horn | PK | 0.0 | 51.6 | 74.0 | -22.4 | 11Mbps |
| 4175.924 | 45.4 | 5.7 | 84.0 | 1.3 | 3.0 | 0.0 | H-Horn | PK | 0.0 | 51.1 | 74.0 | -22.9 | 1Mbps |
| 4924.002 | 24.4 | 6.7 | 47.0 | 1.0 | 3.0 | 0.0 | V-Horn | AV | 0.0 | 31.1 | 54.0 | -22.9 | 1Mbps |
| 4923.995 | 24.3 | 6.7 | 48.0 | 1.0 | 3.0 | 0.0 | H-Horn | AV | 0.0 | 31.0 | 54.0 | -23.0 | 1Mbps |
| 4924.226 | 42.8 | 6.7 | 47.0 | 1.0 | 3.0 | 0.0 | V-Horn | PK | 0.0 | 49.5 | 74.0 | -24.5 | 1Mbps |
| 4923.801 | 22.7 | 6.7 | 203.0 | 1.0 | 3.0 | 0.0 | V-Horn | AV | 0.0 | 29.4 | 54.0 | -24.6 | 11Mbps |
| 4923.563 | 22.6 | 6.7 | 45.0 | 1.0 | 3.0 | 0.0 | H-Horn | AV | 0.0 | 29.3 | 54.0 | -24.7 | 11Mbps |
| 4923.195 | 40.3 | 6.7 | 48.0 | 1.0 | 3.0 | 0.0 | H-Horn | PK | 0.0 | 47.0 | 74.0 | -27.0 | 1Mbps |


NORTHWEST EMC


NORTHWEST EMC


EMC
EMC
EMC
EMC
EMC


NORTHWEST
EMC


NORTHWEST
EMC

## Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

| Channels in Specified Band Investigated: |
|---|
| High |
| Mid |
| Low |

| Operating Modes Investigated: |
|---|
| Typical |

| Data Rates Investigated: |
|---|
| 11Mbps |

| Power Input Settings Investigated: |
|---|
| 120 VAC, 60 Hz. |

| Software\Firmware Applied During Test | | | |
|---|---|---|---|
| **Exercise software** | Hyperterminal | **Version** | 1999 |
| Description | | | |
| The system was tested using special software to exercise the functions of the device during the testing including test type, antenna, channel, data rate, dwell time, pattern, and power. | | | |

| EUT and Peripherals | | | |
|---|---|---|---|
| **Description** | **Manufacturer** | **Model/Part Number** | **Serial Number** |
| Host Monitor | Spacelabs Medical | 91370 | 1370-PAR005 |
| EUT-802.11(b) Radio | Symbol | LA-4137 | Unknown |
| AC Adapter | Ault Inc. | MW116KA1800F03 | Unknown |
| Mouse | Logitech | M-BJ58 | PMA3466489 |

| Remote Equipment Outside of Test Setup Boundary | | | |
|---|---|---|---|
| **Description** | **Manufacturer** | **Model/Part Number** | **Serial Number** |
| Laptop | IBM | 2628 | 78-HKYY6 |
| **Equipment isolated from the EUT so as not to contribute to the measurement result is considered to be outside the test setup boundary** | | | |

| Cables | | | | | |
|---|---|---|---|---|---|
| **Cable Type** | **Shield** | **Length (m)** | **Ferrite** | **Connection 1** | **Connection 2** |
| ECG (splits into 10 leads) | PA | 3.3 | PA | Host Monitor | Unterminated |
| DC Leads | Yes | 2.0 | Yes | Host Monitor | AC Mains |
| SDLC | Yes | 0.4 | Yes | Host Monitor | SDLC Termination |
| Telecom | No | 1.8 | No | Host Monitor | Unterminated |
| Video | Yes | 1.6 | Yes | Host Monitor | Unterminated |
| Null Modem | Yes | 3.0 | No | Host Monitor | Remote laptop |
| LAN | No | 2.0 | No | Host Monitor | Unterminated |
| USB (x2) | Yes | 1.0 | No | Host Monitor | Unterminated |
| USB | Yes | 1.2 | No | Host Monitor | USB Mouse |
| AC Power | No | 1.8 | No | AC Adapter | AC Mains |
| **PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.** | | | | | |

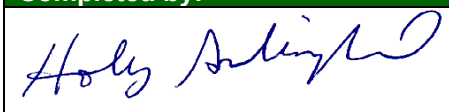
| Measurement Equipment | | | | | |
|---|---|---|---|---|---|
| **Description** | **Manufacturer** | **Model** | **Identifier** | **Last Cal** | **Interval** |
| LISN | Solar | 9252-50-R-24-BNC | LIN | 12/29/2004 | 13 mo |
| High Pass Filter | TTE | H97-100k-50-720B | HFC | 12/29/2004 | 13 mo |
| Attenuator | Tektronix | 011-0059-02 | ATH | 12/29/2004 | 13 mo |
| Spectrum Analyzer | Agilent | E4446A | AAQ | 06/15/2005 | 13 mo |

## Test Description

**Requirement:** Per 47 15.207(c), in addition to devices which are powered directly from the AC power line, conducted emissions measurements shall also be made on battery operated devices that can transmit while charging, as well as on devices that are powered from AC adaptors, or devices that connect to the AC power lines indirectly, obtaining their power through another device which is connected to the AC power lines. All of these devices shall be tested to demonstrate compliance with the conducted limits of 15.207.

**Configuration:** The EUT will be powered either directly or indirectly from the AC power line. Therefore, conducted emissions measurements were made on the AC input of the EUT, or on the AC input of the device used to power the EUT. The AC power line conducted emissions were measured with the EUT operating at the lowest, the highest, and a middle channel in the operational band. The EUT was transmitting at its maximum data rate. For each mode, the spectrum was scanned from 150 kHz to 30 MHz. The test setup and procedures were in accordance with ANSI C63.4-2003.

**Completed by:**



NORTHWEST EMC

# CONDUCTED EMISSIONS DATA SHEET

PSA 2005.9.18
EMI 2005.9.21

| | | | | | |
|---|---|---|---|---|---|
| EUT: | Symbol LA-4137 installed in 91370 | | | Work Order: | SPAC0411 |
| Serial Number: | Unknown | | | Date: | 10/06/05 |
| Customer: | Spacelabs Medical | | | Temperature: | 22 |
| Attendees: | None | | | Humidity: | 40% |
| Project: | None | | | Barometric Pressure | 29.99 |
| Tested by: | David DiVergigelis | Power: | 120VAC/60Hz | Job Site: | EV01 |

| TEST SPECIFICATIONS | Test Method |
|---|---|
| FCC 15.207 AC Powerline Conducted Emissions:2005-04 | ANSI C63.4:2003 |

| TEST PARAMETERS | |
|---|---|
| Cable or Line Tested | N |

**COMMENTS**

**EUT OPERATING MODES**

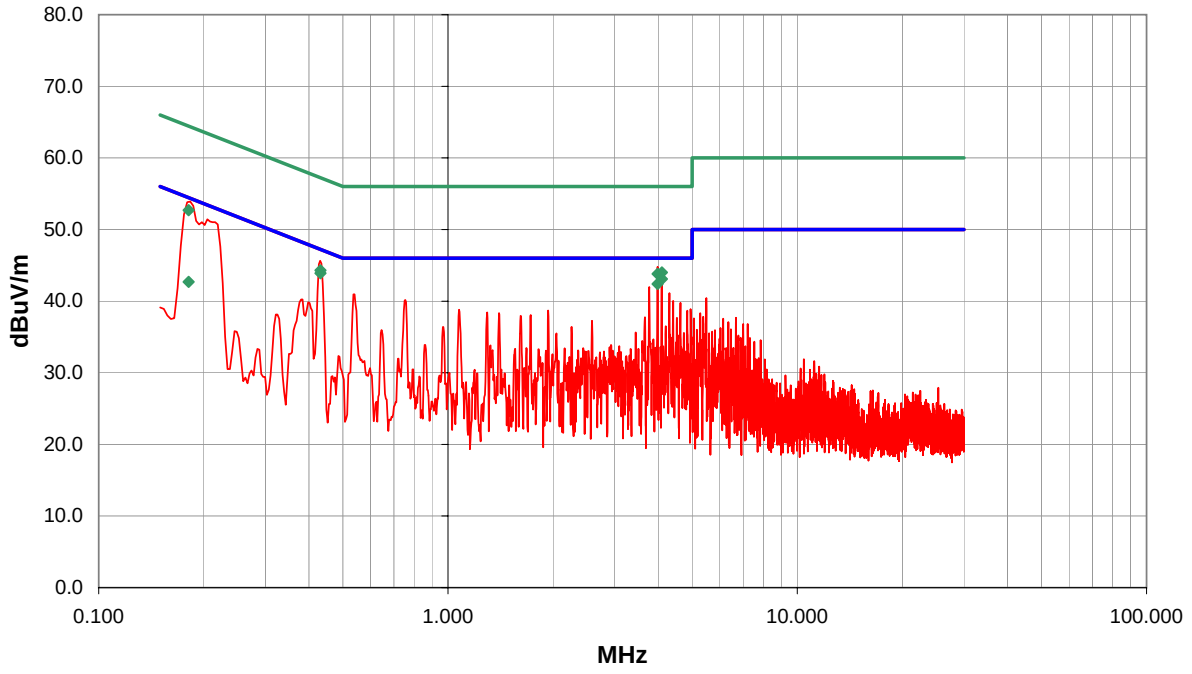
Transmitting low channel

**DEVIATIONS FROM TEST STANDARD**

No deviations.

| | |
|---|---|
| Run # | 1 |
| Configuration # | 1 |
| Results | Pass |

*Signature* David DiVergigelis




| Freq (MHz) | Amplitude (dBuV) | | | Transducer (dB) | Cable (dB) | External Attenuation (dB) | | Detector (blank equal peaks [PK] from scan) | | Adjusted dBuV/m | Spec. Limit dBuV/m | Compared to Spec. (dB) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.096 | 22.5 | | | 0.0 | 0.6 | 20.0 | | AV | | 43.1 | 46.0 | -2.9 |
| 0.431 | 23.9 | | | 0.0 | 0.0 | 20.0 | | AV | | 43.9 | 47.2 | -3.3 |
| 3.983 | 21.8 | | | 0.0 | 0.6 | 20.0 | | AV | | 42.4 | 46.0 | -3.6 |
| 0.181 | 22.7 | | | 0.0 | 0.0 | 20.0 | | AV | | 42.7 | 54.4 | -11.7 |
| 0.181 | 32.7 | | | 0.0 | 0.0 | 20.0 | | QP | | 52.7 | 64.4 | -11.7 |
| 4.096 | 23.4 | | | 0.0 | 0.6 | 20.0 | | QP | | 44.0 | 56.0 | -12.0 |
| 3.983 | 23.2 | | | 0.0 | 0.6 | 20.0 | | QP | | 43.8 | 56.0 | -12.2 |
| 0.431 | 24.3 | | | 0.0 | 0.0 | 20.0 | | QP | | 44.3 | 57.2 | -12.9 |
| 0.183 | 33.7 | | | 0.0 | 0.2 | 20.0 | | | | 53.9 | 54.4 | -0.4 |
| 3.984 | 24.2 | | | 0.0 | 0.6 | 20.0 | | | | 44.8 | 46.0 | -1.2 |
| 0.431 | 25.4 | | | 0.0 | 0.2 | 20.0 | | | | 45.6 | 47.2 | -1.6 |
| 4.089 | 23.1 | | | 0.0 | 0.6 | 20.0 | | | | 43.7 | 46.0 | -2.3 |
| 3.769 | 21.4 | | | 0.0 | 0.6 | 20.0 | | | | 42.0 | 46.0 | -4.0 |
| 4.304 | 20.5 | | | 0.0 | 0.6 | 20.0 | | | | 41.1 | 46.0 | -4.9 |
| 0.540 | 20.7 | | | 0.0 | 0.3 | 20.0 | | | | 41.0 | 46.0 | -5.0 |
| 0.755 | 19.9 | | | 0.0 | 0.3 | 20.0 | | | | 40.2 | 46.0 | -5.8 |
| 4.414 | 19.4 | | | 0.0 | 0.6 | 20.0 | | | | 40.0 | 46.0 | -6.0 |
| 4.629 | 19.1 | | | 0.0 | 0.7 | 20.0 | | | | 39.8 | 46.0 | -6.2 |
| 4.950 | 18.2 | | | 0.0 | 0.7 | 20.0 | | | | 38.9 | 46.0 | -7.1 |

NORTHWEST EMC

# CONDUCTED EMISSIONS DATA SHEET

PSA 2005.9.18
EMI 2005.9.21

| | | | | | |
|---|---|---|---|---|---|
| EUT: | Symbol LA-4137 installed in 91370 | | | Work Order: | SPAC0411 |
| Serial Number: | Unknown | | | Date: | 10/06/05 |
| Customer: | Spacelabs Medical | | | Temperature: | 22 |
| Attendees: | None | | | Humidity: | 40% |
| Project: | None | | | Barometric Pressure | 29.99 |
| Tested by: | David DiVergigelis | Power: | 120VAC/60Hz | Job Site: | EV01 |

| TEST SPECIFICATIONS | Test Method |
|---|---|
| FCC 15.207 AC Powerline Conducted Emissions:2005-04 | ANSI C63.4:2003 |

| TEST PARAMETERS | |
|---|---|
| Cable or Line Tested | L1 |

**COMMENTS**

**EUT OPERATING MODES**

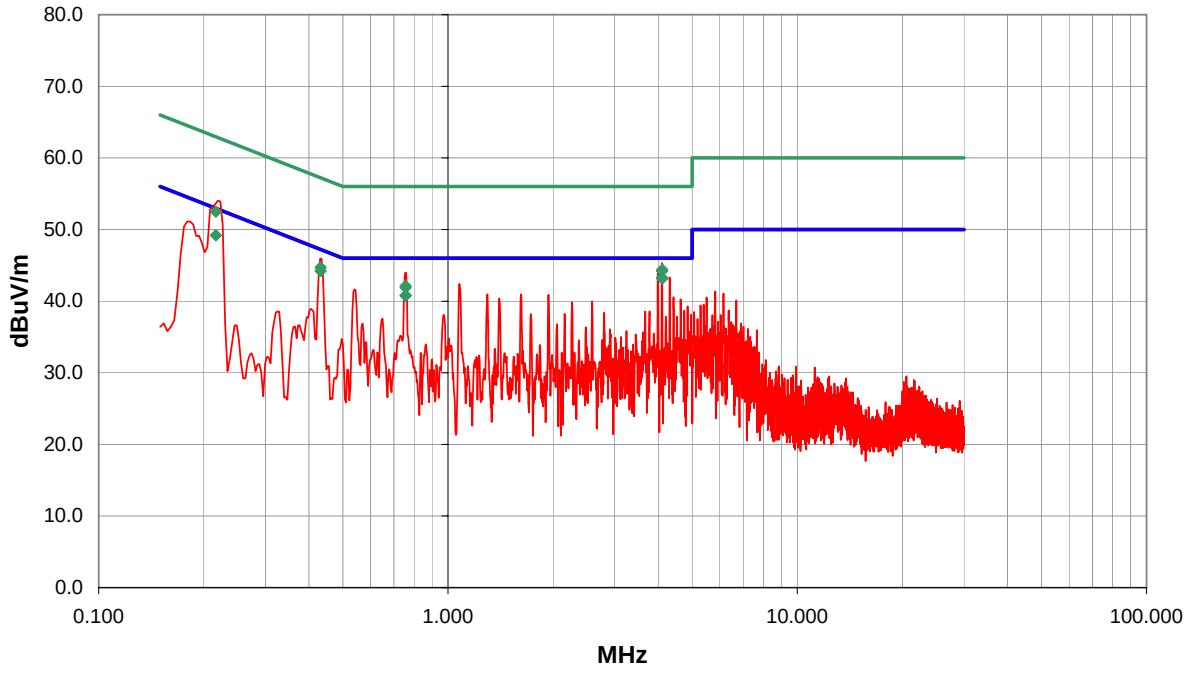
Transmitting low channel

**DEVIATIONS FROM TEST STANDARD**

No deviations.

| | |
|---|---|
| Run # | 2 |
| Configuration # | 1 |
| Results | Pass |

*Signature* David DiVergigelis




| Freq (MHz) | Amplitude (dBuV) | | | Transducer (dB) | Cable (dB) | External Attenuation (dB) | | Detector (blank equal peaks [PK] from scan) | | Adjusted dBuV/m | Spec. Limit dBuV/m | Compared to Spec. (dB) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.100 | 22.6 | | | 0.0 | 0.6 | 20.0 | | AV | | 43.2 | 46.0 | -2.8 |
| 4.103 | 22.6 | | | 0.0 | 0.6 | 20.0 | | AV | | 43.2 | 46.0 | -2.8 |
| 4.106 | 22.6 | | | 0.0 | 0.6 | 20.0 | | AV | | 43.2 | 46.0 | -2.8 |
| 0.432 | 24.2 | | | 0.0 | 0.0 | 20.0 | | AV | | 44.2 | 47.2 | -3.0 |
| 0.216 | 29.2 | | | 0.0 | 0.0 | 20.0 | | AV | | 49.2 | 53.0 | -3.8 |
| 0.756 | 20.8 | | | 0.0 | 0.0 | 20.0 | | AV | | 40.8 | 46.0 | -5.2 |
| 0.757 | 20.8 | | | 0.0 | 0.0 | 20.0 | | AV | | 40.8 | 46.0 | -5.2 |
| 0.216 | 32.5 | | | 0.0 | 0.0 | 20.0 | | QP | | 52.5 | 63.0 | -10.5 |
| 4.106 | 23.8 | | | 0.0 | 0.6 | 20.0 | | QP | | 44.4 | 56.0 | -11.6 |
| 4.103 | 23.7 | | | 0.0 | 0.6 | 20.0 | | QP | | 44.3 | 56.0 | -11.7 |
| 4.100 | 23.6 | | | 0.0 | 0.6 | 20.0 | | QP | | 44.2 | 56.0 | -11.8 |
| 0.432 | 24.7 | | | 0.0 | 0.0 | 20.0 | | QP | | 44.7 | 57.2 | -12.5 |
| 0.757 | 22.1 | | | 0.0 | 0.0 | 20.0 | | QP | | 42.1 | 56.0 | -13.9 |
| 0.756 | 21.9 | | | 0.0 | 0.0 | 20.0 | | QP | | 41.9 | 56.0 | -14.1 |
| 4.100 | 24.7 | | | 0.0 | 0.6 | 20.0 | | | | 45.3 | 46.0 | -0.7 |
| 0.434 | 25.7 | | | 0.0 | 0.2 | 20.0 | | | | 45.9 | 47.2 | -1.2 |
| 0.759 | 23.7 | | | 0.0 | 0.3 | 20.0 | | | | 44.0 | 46.0 | -2.0 |
| 3.991 | 23.3 | | | 0.0 | 0.6 | 20.0 | | | | 43.9 | 46.0 | -2.1 |

NORTHWEST EMC

# CONDUCTED EMISSIONS DATA SHEET

PSA 2005.9.18
EMI 2005.9.21

| | | | | | |
|---|---|---|---|---|---|
| EUT: | Symbol LA-4137 installed in 91370 | | | Work Order: | SPAC0411 |
| Serial Number: | Unknown | | | Date: | 10/06/05 |
| Customer: | Spacelabs Medical | | | Temperature: | 22 |
| Attendees: | None | | | Humidity: | 40% |
| Project: | None | | | Barometric Pressure | 29.99 |
| Tested by: | David DiVergigelis | Power: | 120VAC/60Hz | Job Site: | EV01 |

| TEST SPECIFICATIONS | Test Method |
|---|---|
| FCC 15.207 AC Powerline Conducted Emissions:2005-04 | ANSI C63.4:2003 |

**TEST PARAMETERS**

| | |
|---|---|
| Cable or Line Tested | L1 |

**COMMENTS**

**EUT OPERATING MODES**

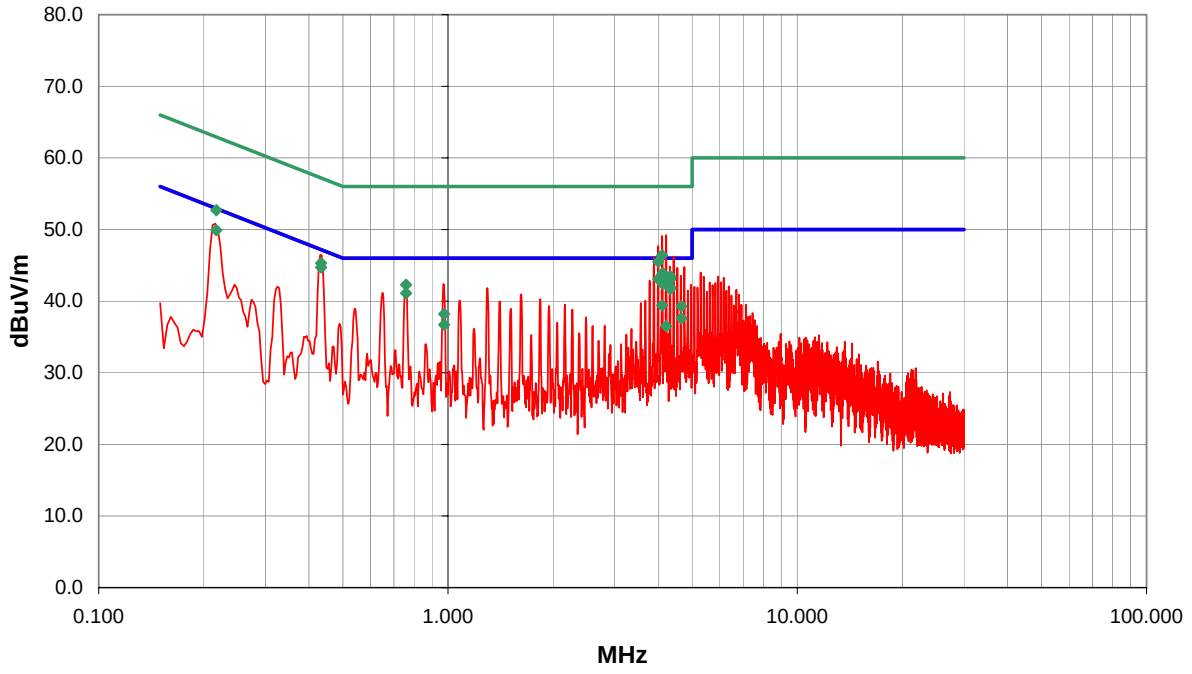
Transmitting mid channel

**DEVIATIONS FROM TEST STANDARD**

No deviations.

| | |
|---|---|
| Run # | 3 |
| Configuration # | 1 |
| Results | Pass |

Signature David DiVergigelis




| Freq (MHz) | Amplitude (dBuV) | | | Transducer (dB) | Cable (dB) | External Attenuation (dB) | | Detector (blank equal peaks [PK] from scan) | | Adjusted dBuV/m | Spec. Limit dBuV/m | Compared to Spec. (dB) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.433 | 24.7 | | | 0.0 | 0.0 | 20.0 | | AV | | 44.7 | 47.2 | -2.5 |
| 3.997 | 22.5 | | | 0.0 | 0.6 | 20.0 | | AV | | 43.1 | 46.0 | -2.9 |
| 0.217 | 29.9 | | | 0.0 | 0.0 | 20.0 | | AV | | 49.9 | 52.9 | -3.0 |
| 4.117 | 22.0 | | | 0.0 | 0.6 | 20.0 | | AV | | 42.6 | 46.0 | -3.4 |
| 4.118 | 22.0 | | | 0.0 | 0.6 | 20.0 | | AV | | 42.6 | 46.0 | -3.4 |
| 4.113 | 21.9 | | | 0.0 | 0.6 | 20.0 | | AV | | 42.5 | 46.0 | -3.5 |
| 4.116 | 21.9 | | | 0.0 | 0.6 | 20.0 | | AV | | 42.5 | 46.0 | -3.5 |
| 4.331 | 21.3 | | | 0.0 | 0.6 | 20.0 | | AV | | 41.9 | 46.0 | -4.1 |
| 4.331 | 21.2 | | | 0.0 | 0.6 | 20.0 | | AV | | 41.8 | 46.0 | -4.2 |
| 4.332 | 21.1 | | | 0.0 | 0.6 | 20.0 | | AV | | 41.7 | 46.0 | -4.3 |
| 0.758 | 21.1 | | | 0.0 | 0.0 | 20.0 | | AV | | 41.1 | 46.0 | -4.9 |
| 4.101 | 18.8 | | | 0.0 | 0.6 | 20.0 | | AV | | 39.4 | 46.0 | -6.6 |
| 4.658 | 17.0 | | | 0.0 | 0.6 | 20.0 | | AV | | 37.6 | 46.0 | -8.4 |
| 0.975 | 16.7 | | | 0.0 | 0.0 | 20.0 | | AV | | 36.7 | 46.0 | -9.3 |
| 4.214 | 15.9 | | | 0.0 | 0.6 | 20.0 | | AV | | 36.5 | 46.0 | -9.5 |
| 4.101 | 25.8 | | | 0.0 | 0.6 | 20.0 | | QP | | 46.4 | 56.0 | -9.6 |
| 0.217 | 32.7 | | | 0.0 | 0.0 | 20.0 | | QP | | 52.7 | 62.9 | -10.2 |
| 3.997 | 24.9 | | | 0.0 | 0.6 | 20.0 | | QP | | 45.5 | 56.0 | -10.5 |
| 0.433 | 25.3 | | | 0.0 | 0.0 | 20.0 | | QP | | 45.3 | 57.2 | -11.9 |
| 4.118 | 23.3 | | | 0.0 | 0.6 | 20.0 | | QP | | 43.9 | 56.0 | -12.1 |

| **Freq (MHz)** | Amplitude (dBuV) | | | Transducer (dB) | Cable (dB) | External Attenuation (dB) | | Detector (blank equal peaks [PK] from scan) | | Adjusted dBuV/m | Spec. Limit dBuV/m | Compared to Spec. (dB) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.113 | 23.1 | | | 0.0 | 0.6 | 20.0 | | QP | | 43.7 | 56.0 | -12.3 |
| 4.117 | 23.1 | | | 0.0 | 0.6 | 20.0 | | QP | | 43.7 | 56.0 | -12.3 |
| 4.113 | 23.0 | | | 0.0 | 0.6 | 20.0 | | QP | | 43.6 | 56.0 | -12.4 |
| 4.116 | 23.0 | | | 0.0 | 0.6 | 20.0 | | QP | | 43.6 | 56.0 | -12.4 |
| 4.331 | 22.9 | | | 0.0 | 0.6 | 20.0 | | QP | | 43.5 | 56.0 | -12.5 |
| 4.331 | 22.6 | | | 0.0 | 0.6 | 20.0 | | QP | | 43.2 | 56.0 | -12.8 |
| 4.332 | 22.4 | | | 0.0 | 0.6 | 20.0 | | QP | | 43.0 | 56.0 | -13.0 |
| 0.758 | 22.3 | | | 0.0 | 0.0 | 20.0 | | QP | | 42.3 | 56.0 | -13.7 |
| 4.658 | 18.7 | | | 0.0 | 0.6 | 20.0 | | QP | | 39.3 | 56.0 | -16.7 |
| 0.975 | 18.2 | | | 0.0 | 0.0 | 20.0 | | QP | | 38.2 | 56.0 | -17.8 |

NORTHWEST EMC

# CONDUCTED EMISSIONS DATA SHEET

PSA 2005.9.18
EMI 2005.9.21

| | | | | | |
|---|---|---|---|---|---|
| EUT: | Symbol LA-4137 installed in 91370 | | | Work Order: | SPAC0411 |
| Serial Number: | Unknown | | | Date: | 10/06/05 |
| Customer: | Spacelabs Medical | | | Temperature: | 22 |
| Attendees: | None | | | Humidity: | 40% |
| Project: | None | | | Barometric Pressure | 29.99 |
| Tested by: | David DiVergigelis | Power: | 120VAC/60Hz | Job Site: | EV01 |

| TEST SPECIFICATIONS | Test Method |
|---|---|
| FCC 15.207 AC Powerline Conducted Emissions:2005-04 | ANSI C63.4:2003 |

| TEST PARAMETERS | |
|---|---|
| Cable or Line Tested | N |

**COMMENTS**

**EUT OPERATING MODES**

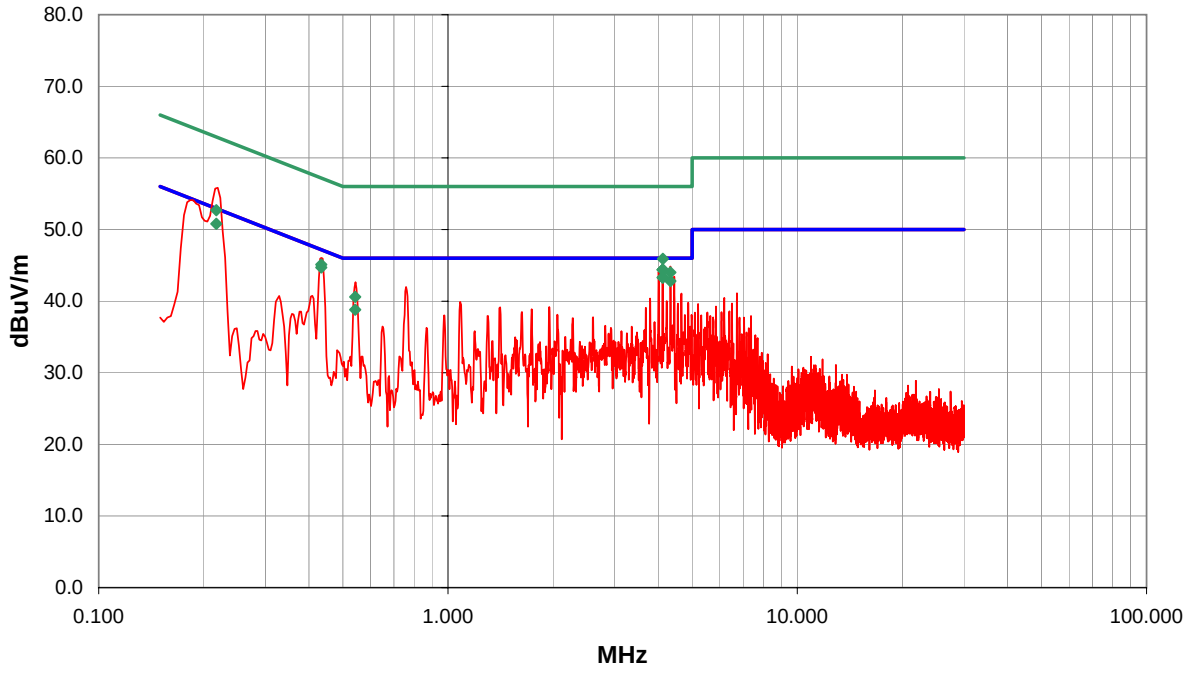
Transmitting mid channel

**DEVIATIONS FROM TEST STANDARD**

No deviations.

| | |
|---|---|
| Run # | 4 |
| Configuration # | 1 |
| Results | Pass |

Signature David DiVergigelis




| Freq (MHz) | Amplitude (dBuV) | | | Transducer (dB) | Cable (dB) | External Attenuation (dB) | | Detector (blank equal peaks [PK] from scan) | | Adjusted dBuV/m | Spec. Limit dBuV/m | Compared to Spec. (dB) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.122 | 25.3 | | | 0.0 | 0.6 | 20.0 | | AV | | 45.9 | 46.0 | -0.1 |
| 0.217 | 30.8 | | | 0.0 | 0.0 | 20.0 | | AV | | 50.8 | 52.9 | -2.1 |
| 0.434 | 24.7 | | | 0.0 | 0.0 | 20.0 | | AV | | 44.7 | 47.2 | -2.5 |
| 4.120 | 22.7 | | | 0.0 | 0.6 | 20.0 | | AV | | 43.3 | 46.0 | -2.7 |
| 4.120 | 22.7 | | | 0.0 | 0.6 | 20.0 | | AV | | 43.3 | 46.0 | -2.7 |
| 4.334 | 22.2 | | | 0.0 | 0.6 | 20.0 | | AV | | 42.8 | 46.0 | -3.2 |
| 0.542 | 18.8 | | | 0.0 | 0.0 | 20.0 | | AV | | 38.8 | 46.0 | -7.2 |
| 0.217 | 32.7 | | | 0.0 | 0.0 | 20.0 | | QP | | 52.7 | 62.9 | -10.2 |
| 4.120 | 23.8 | | | 0.0 | 0.6 | 20.0 | | QP | | 44.4 | 56.0 | -11.6 |
| 4.120 | 23.8 | | | 0.0 | 0.6 | 20.0 | | QP | | 44.4 | 56.0 | -11.6 |
| 4.120 | 23.8 | | | 0.0 | 0.6 | 20.0 | | QP | | 44.4 | 56.0 | -11.6 |
| 4.334 | 23.4 | | | 0.0 | 0.6 | 20.0 | | QP | | 44.0 | 56.0 | -12.0 |
| 0.434 | 25.1 | | | 0.0 | 0.0 | 20.0 | | QP | | 45.1 | 57.2 | -12.1 |
| 0.542 | 20.6 | | | 0.0 | 0.0 | 20.0 | | QP | | 40.6 | 56.0 | -15.4 |
| 0.186 | 33.9 | | | 0.0 | 0.2 | 20.0 | | | | 54.1 | 54.2 | -0.1 |
| 0.434 | 25.8 | | | 0.0 | 0.2 | 20.0 | | | | 46.0 | 47.2 | -1.1 |
| 4.334 | 24.2 | | | 0.0 | 0.6 | 20.0 | | | | 44.8 | 46.0 | -1.2 |
| 4.119 | 24.0 | | | 0.0 | 0.6 | 20.0 | | | | 44.6 | 46.0 | -1.4 |
| 4.009 | 23.5 | | | 0.0 | 0.6 | 20.0 | | | | 44.1 | 46.0 | -1.9 |

NORTHWEST EMC

# CONDUCTED EMISSIONS DATA SHEET

PSA 2005.9.18
EMI 2005.9.21

| | | | | | |
|---|---|---|---|---|---|
| EUT: | Symbol LA-4137 installed in 91370 | | | Work Order: | SPAC0411 |
| Serial Number: | Unknown | | | Date: | 10/06/05 |
| Customer: | Spacelabs Medical | | | Temperature: | 22 |
| Attendees: | None | | | Humidity: | 40% |
| Project: | None | | | Barometric Pressure | 29.99 |
| Tested by: | David DiVergigelis | Power: | 120VAC/60Hz | Job Site: | EV01 |

| TEST SPECIFICATIONS | Test Method |
|---|---|
| FCC 15.207 AC Powerline Conducted Emissions:2005-04 | ANSI C63.4:2003 |

| TEST PARAMETERS | |
|---|---|
| Cable or Line Tested | N |

**COMMENTS**

**EUT OPERATING MODES**

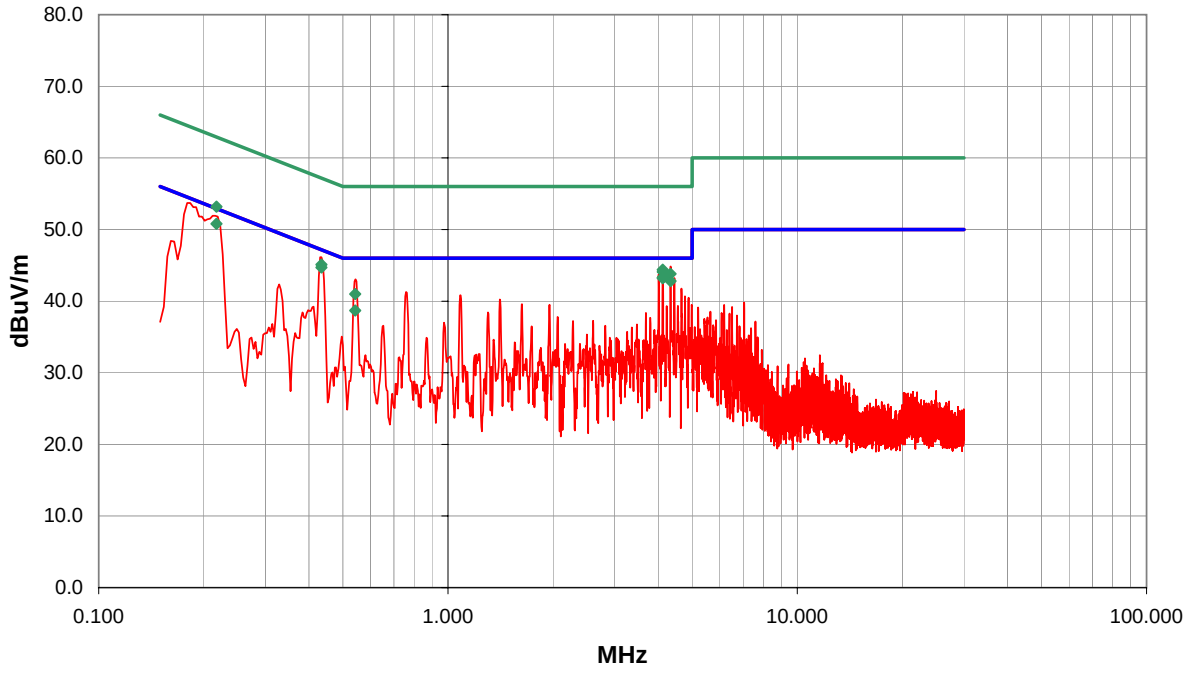
Transmitting high channel

**DEVIATIONS FROM TEST STANDARD**

No deviations.

| | |
|---|---|
| Run # | 5 |
| Configuration # | 1 |
| Results | Pass |

*Signature* David DiVergigelis




| Freq (MHz) | Amplitude (dBuV) | | | Transducer (dB) | Cable (dB) | External Attenuation (dB) | | Detector (blank equal peaks [PK] from scan) | | Adjusted dBuV/m | Spec. Limit dBuV/m | Compared to Spec. (dB) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.217 | 30.8 | | | 0.0 | 0.0 | 20.0 | | AV | | 50.8 | 52.9 | -2.1 |
| 0.434 | 24.7 | | | 0.0 | 0.0 | 20.0 | | AV | | 44.7 | 47.2 | -2.5 |
| 4.121 | 22.7 | | | 0.0 | 0.6 | 20.0 | | AV | | 43.3 | 46.0 | -2.7 |
| 4.121 | 22.7 | | | 0.0 | 0.6 | 20.0 | | AV | | 43.3 | 46.0 | -2.7 |
| 4.121 | 22.6 | | | 0.0 | 0.6 | 20.0 | | AV | | 43.2 | 46.0 | -2.8 |
| 4.336 | 22.2 | | | 0.0 | 0.6 | 20.0 | | AV | | 42.8 | 46.0 | -3.2 |
| 0.542 | 18.7 | | | 0.0 | 0.0 | 20.0 | | AV | | 38.7 | 46.0 | -7.3 |
| 0.217 | 33.2 | | | 0.0 | 0.0 | 20.0 | | QP | | 53.2 | 62.9 | -9.7 |
| 4.121 | 23.8 | | | 0.0 | 0.6 | 20.0 | | QP | | 44.4 | 56.0 | -11.6 |
| 4.121 | 23.5 | | | 0.0 | 0.6 | 20.0 | | QP | | 44.1 | 56.0 | -11.9 |
| 4.121 | 23.5 | | | 0.0 | 0.6 | 20.0 | | QP | | 44.1 | 56.0 | -11.9 |
| 0.434 | 25.1 | | | 0.0 | 0.0 | 20.0 | | QP | | 45.1 | 57.2 | -12.1 |
| 4.336 | 23.2 | | | 0.0 | 0.6 | 20.0 | | QP | | 43.8 | 56.0 | -12.2 |
| 0.542 | 21.0 | | | 0.0 | 0.0 | 20.0 | | QP | | 41.0 | 56.0 | -15.0 |
| 0.183 | 33.5 | | | 0.0 | 0.2 | 20.0 | | | | 53.7 | 54.4 | -0.6 |
| 0.434 | 25.9 | | | 0.0 | 0.2 | 20.0 | | | | 46.1 | 47.2 | -1.0 |
| 4.341 | 24.2 | | | 0.0 | 0.6 | 20.0 | | | | 44.8 | 46.0 | -1.2 |
| 4.122 | 24.2 | | | 0.0 | 0.6 | 20.0 | | | | 44.8 | 46.0 | -1.2 |
| 4.013 | 23.1 | | | 0.0 | 0.6 | 20.0 | | | | 43.7 | 46.0 | -2.3 |

NORTHWEST EMC

# CONDUCTED EMISSIONS DATA SHEET

PSA 2005.9.18
EMI 2005.9.21

| | | | | | |
|---|---|---|---|---|---|
| EUT: | Symbol LA-4137 installed in 91370 | | | Work Order: | SPAC0411 |
| Serial Number: | Unknown | | | Date: | 10/06/05 |
| Customer: | Spacelabs Medical | | | Temperature: | 22 |
| Attendees: | None | | | Humidity: | 40% |
| Project: | None | | | Barometric Pressure | 29.99 |
| Tested by: | David DiVergigelis | Power: | 120VAC/60Hz | Job Site: | EV01 |

| TEST SPECIFICATIONS | Test Method |
|---|---|
| FCC 15.207 AC Powerline Conducted Emissions:2005-04 | ANSI C63.4:2003 |

| TEST PARAMETERS | |
|---|---|
| Cable or Line Tested | L1 |

**COMMENTS**

**EUT OPERATING MODES**

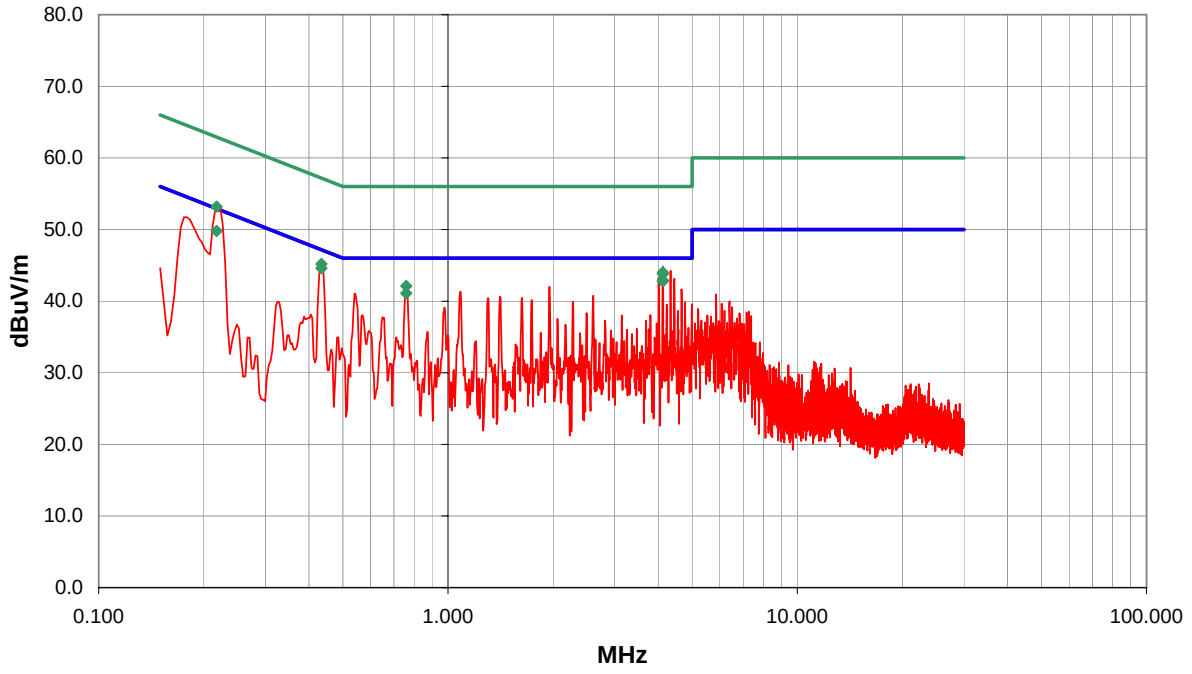
Transmitting high channel

**DEVIATIONS FROM TEST STANDARD**

No deviations.

| | |
|---|---|
| Run # | 6 |
| Configuration # | 1 |
| Results | Pass |

Signature David DiVergigelis




| Freq (MHz) | Amplitude (dBuV) | | | Transducer (dB) | Cable (dB) | External Attenuation (dB) | | Detector (blank equal peaks [PK] from scan) | | Adjusted dBuV/m | Spec. Limit dBuV/m | Compared to Spec. (dB) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.434 | 24.6 | | | 0.0 | 0.0 | 20.0 | | AV | | 44.6 | 47.2 | -2.6 |
| 4.122 | 22.3 | | | 0.0 | 0.6 | 20.0 | | AV | | 42.9 | 46.0 | -3.1 |
| 0.218 | 29.8 | | | 0.0 | 0.0 | 20.0 | | AV | | 49.8 | 52.9 | -3.1 |
| 4.122 | 22.2 | | | 0.0 | 0.6 | 20.0 | | AV | | 42.8 | 46.0 | -3.2 |
| 4.122 | 22.2 | | | 0.0 | 0.6 | 20.0 | | AV | | 42.8 | 46.0 | -3.2 |
| 0.760 | 21.1 | | | 0.0 | 0.0 | 20.0 | | AV | | 41.1 | 46.0 | -4.9 |
| 0.218 | 33.2 | | | 0.0 | 0.0 | 20.0 | | QP | | 53.2 | 62.9 | -9.7 |
| 0.434 | 25.2 | | | 0.0 | 0.0 | 20.0 | | QP | | 45.2 | 57.2 | -12.0 |
| 4.122 | 23.4 | | | 0.0 | 0.6 | 20.0 | | QP | | 44.0 | 56.0 | -12.0 |
| 4.122 | 23.3 | | | 0.0 | 0.6 | 20.0 | | QP | | 43.9 | 56.0 | -12.1 |
| 4.122 | 23.2 | | | 0.0 | 0.6 | 20.0 | | QP | | 43.8 | 56.0 | -12.2 |
| 0.760 | 22.1 | | | 0.0 | 0.0 | 20.0 | | QP | | 42.1 | 56.0 | -13.9 |
| 4.126 | 24.2 | | | 0.0 | 0.6 | 20.0 | | | | 44.8 | 46.0 | -1.2 |
| 0.434 | 25.3 | | | 0.0 | 0.2 | 20.0 | | | | 45.5 | 47.2 | -1.6 |
| 4.341 | 23.6 | | | 0.0 | 0.6 | 20.0 | | | | 44.2 | 46.0 | -1.8 |
| 4.013 | 22.7 | | | 0.0 | 0.6 | 20.0 | | | | 43.3 | 46.0 | -2.7 |
| 0.179 | 31.5 | | | 0.0 | 0.2 | 20.0 | | | | 51.7 | 54.5 | -2.8 |
| 4.447 | 22.5 | | | 0.0 | 0.6 | 20.0 | | | | 43.1 | 46.0 | -2.9 |
| 0.759 | 22.5 | | | 0.0 | 0.3 | 20.0 | | | | 42.8 | 46.0 | -3.2 |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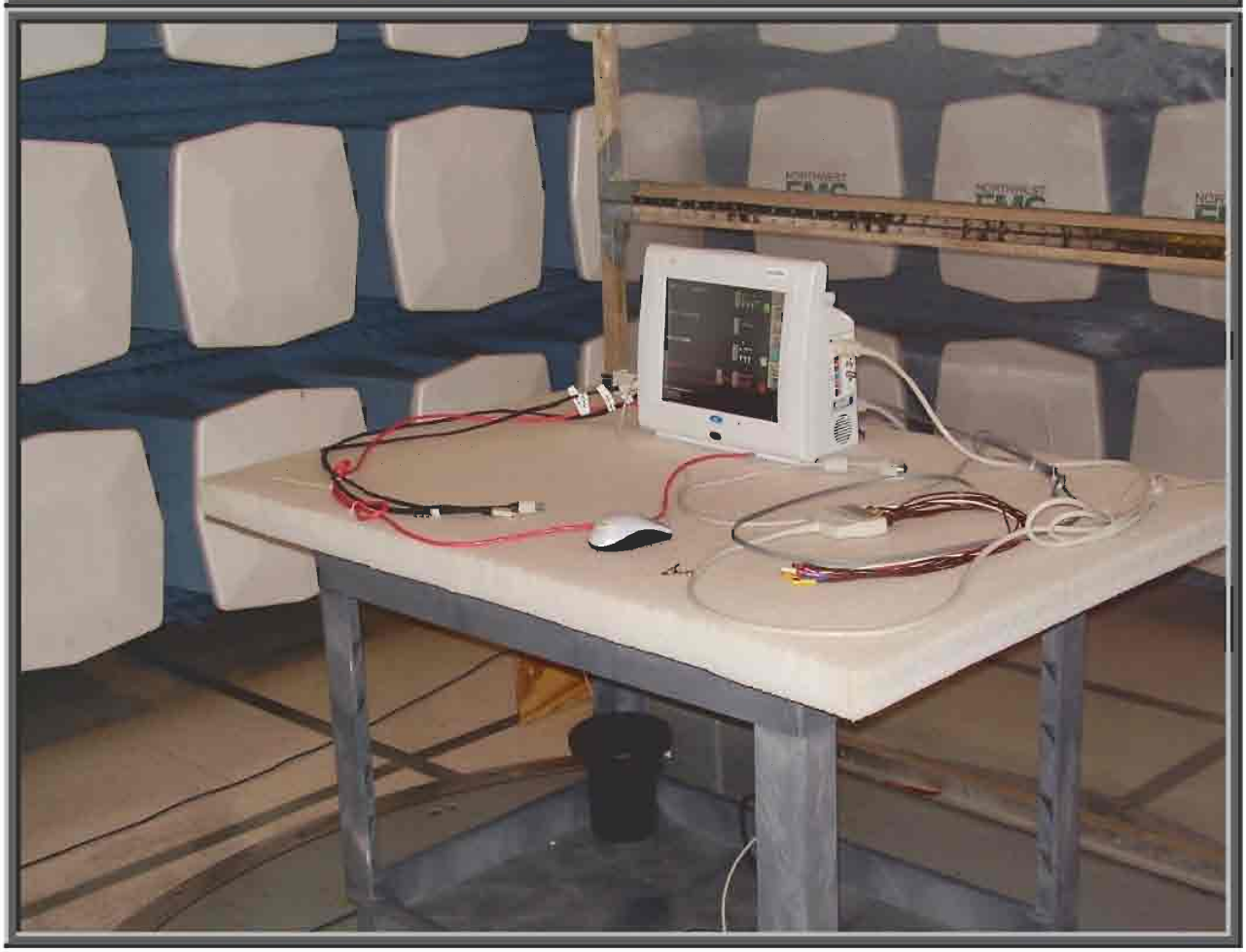

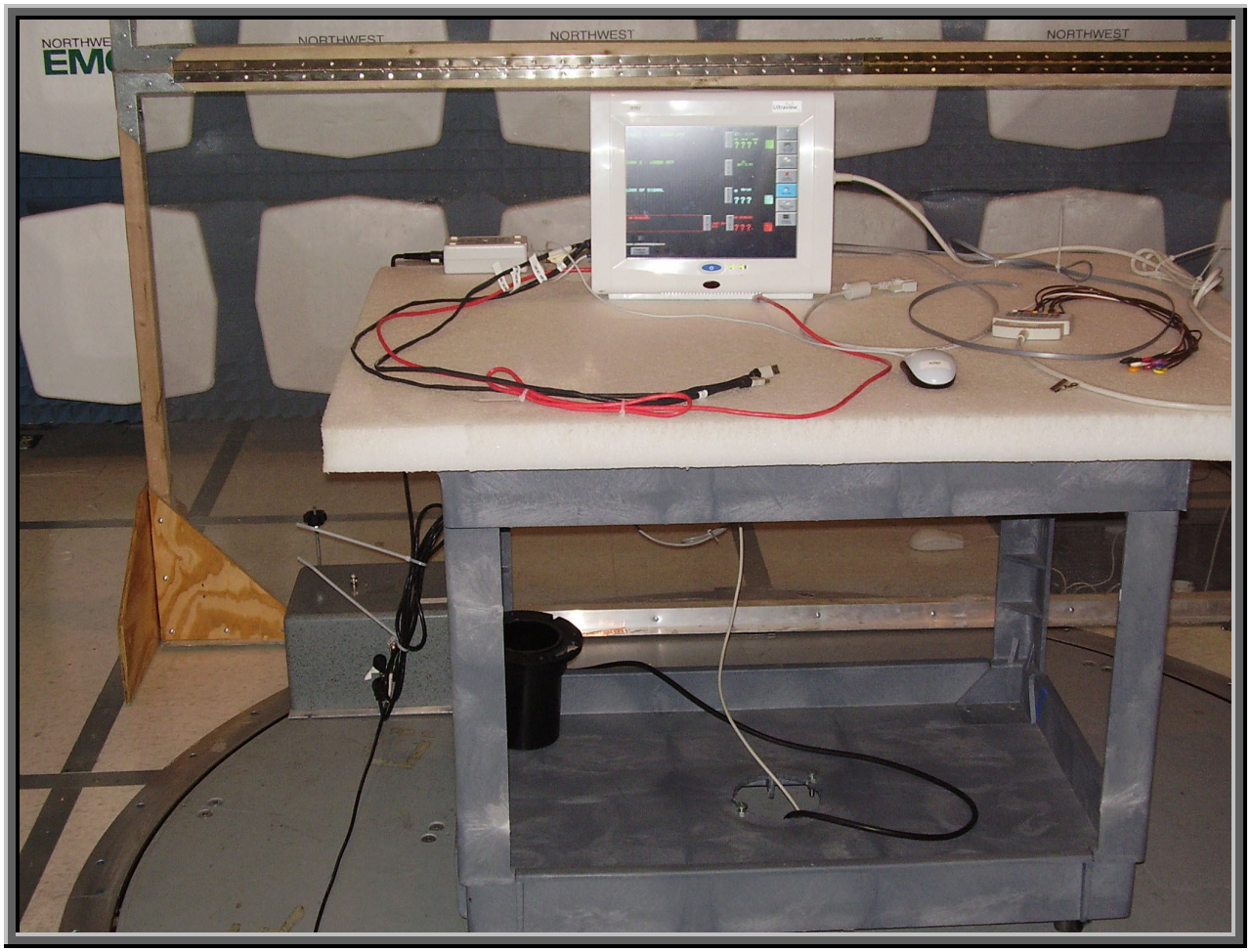
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