

Electromagnetic Compatibility Test Report

Prepared in accordance with

EN 55022:2006+A1:2007

On

**DC/DC Converter
LTM4606**

For

**Linear Technology Corporation
1630 McCarthy Blvd.
Milpitas, CA 95035
U.S.A.**

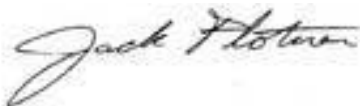
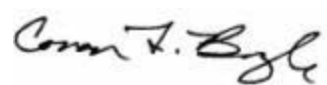




Prepared by:

**TUV Rheinland of North America, Inc.
2305 Mission College Blvd., Suite 105
Santa Clara, CA 95054
U.S.A.**

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Report No.: 0000089737
31063723.001

Page 2 of 35

| | | |
|--|--|---|
| Auftraggeber: <i>Client:</i> | Linear Technology Corporation 1630 McCarthy Blvd. Milpitas, CA 95035 | Eddie Beville Main (408) 432-1900 Ext. 3007 Fax (408) 434-0507 ebeville@linear.com |
| Bezeichnung: <i>Identification:</i> | DC DC Converter | Serien-Nr.: <i>Serial No.</i> |
| Gegenstand der Prüfung: <i>Test item:</i> | LTM4606 | Prüfdatum: <i>Date tested:</i> |
| Prüfart: <i>Testing location:</i> | TUV Rheinland of North America 2305 Mission College Blvd., Suite 105 Santa Clara, CA 95054 U.S.A. | Tel: (925) 249-9123 Fax: (925) 249-9124 |
| Prüfgrundlage: <i>Test specification:</i> | Emissions: EN 55022:2006+A1:2007 | |
| Prüfresultat: <i>Test Result:</i> | Der vorstehend beschriebene Prüfgegenstand wurde geprüft und entspricht oben genannter Prüfgrundlage. The above product was found to be Compliant to the above test standard(s) | |
| geprüft / tested by: Jack Plotner | | kontrolliert / reviewed by: Conan Boyle |
|  12/23/2010 Datum Name Unterschrift Date Name Signature | |  12/28/2010 Datum Name Unterschrift Date Name Signature |
| Sonstiges: <i>Other Aspects:</i> | None | |
| Abkürzungen: OK, Pass, Compliant, Complies = entspricht Prüfgrundlage Fail, Not Compliant, Does not Comply = entspricht nicht Prüfgrundlage N/A = nicht anwendbar | Abbreviations: OK, Pass, Compliant, Complies = passed Fail, Not Compliant, Does Not Comply = failed N/A = not applicable | |
|  |  |  |
| US5251 | NVLAP LAB CODE 100411-0 | 2932D-1 |
| | |  |
| | | 1097 |

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TABLE OF CONTENTS

| | | |
|-------------------------|--|-----------|
| 1 | GENERAL INFORMATION | 4 |
| 1.1 | SCOPE | 4 |
| 1.2 | PURPOSE | 4 |
| 1.3 | SUMMARY OF TEST RESULTS | 5 |
| 2 | LABORATORY INFORMATION | 6 |
| 2.1 | ACCREDITATIONS & ENDORSEMENTS | 6 |
| 2.2 | TEST FACILITIES | 7 |
| 2.3 | MEASUREMENT UNCERTAINTY | 8 |
| 2.4 | CALIBRATION TRACEABILITY | 9 |
| 2.5 | MEASUREMENT EQUIPMENT USED | 9 |
| 3 | PRODUCT INFORMATION | 10 |
| 3.1 | PRODUCT DESCRIPTION | 10 |
| 3.2 | EQUIPMENT MODIFICATIONS AND TEST SETUP | 10 |
| 3.3 | TEST PLAN | 10 |
| 4 | EMISSIONS..... | 13 |
| 4.1 | RADIATED EMISSIONS | 13 |
| APPENDIX A | | 29 |
| 5 | TEST PLAN..... | 29 |
| 5.1 | GENERAL INFORMATION | 29 |
| 5.2 | MODEL(S) NAME | 29 |
| 5.3 | TYPE OF PRODUCT..... | 29 |
| 5.4 | EQUIPMENT UNDER TEST (EUT) DESCRIPTION | 30 |
| 5.5 | MODIFICATIONS | 30 |
| 5.6 | PRODUCT ENVIRONMENT | 30 |
| 5.7 | COUNTRIES | 30 |
| 5.8 | APPLICABLE DOCUMENTS | 30 |
| 5.9 | EUT ELECTRICAL POWERED INFORMATION | 31 |
| 5.10 | EUT CLOCK/OSCILLATOR FREQUENCIES | 32 |
| 5.11 | ELECTRICAL SUPPORT EQUIPMENT..... | 32 |
| 5.12 | EUT EQUIPMENT/CABLING INFORMATION | 32 |
| 5.13 | EUT TEST PROGRAM..... | 33 |
| 5.14 | MONITORING OF EUT DURING TESTING | 33 |
| 5.15 | EUT CONFIGURATION | 33 |
| 5.16 | EMISSIONS | 35 |

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1 General Information

1.1 Scope

This report is intended to document the status of conformance with the requirements of EN 55022:2006+A1:2007 based on the results of testing performed on December 6th, 2010 on the DC DC Converter, Model No. LTM4606, manufactured by This report only applies to the specific samples tested under the stated test conditions. It is the responsibility of the manufacturer to assure that additional production units of this model are manufactured with identical or EMI equivalent electrical and mechanical components. This report is further intended to document changes and modifications to the EUT throughout its life cycle. All documentation will be included as a supplement.

1.2 Purpose

Testing was performed to evaluate the EMC performance of the EUT (Equipment Under Test) in accordance with the applicable requirements, procedures, and criteria defined in the application of regulations and application of standards listed in this report.

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1.3 Summary of Test Results

| | | | | | |
|---|--|--------------------------------------|----------------|-----------------|---------------------|
| Applicant | Linear Technology Corporation 1630 McCarthy Blvd. Milpitas, CA 95035 | Tel | (408) 432-1900 | Contact | Eddie Beville |
| | | Fax | (408) 434-0507 | e-mail | ebeville@linear.com |
| Description | DC/DC Converter | Model Number | LTM4606 | | |
| Serial Number | None | Test Voltage/Freq. | 4.5 - 28 Vdc | | |
| Test Date Completed: | December 6th, 2010 | Test Engineer | Jack Plotner | | |
| Standards | Description | Severity Level or Limit | | Criteria | Test Result |
| EN 55022:2006+A1:2007 Product Family Standard Emissions | Information Technology Equipment – Radio Disturbance | See called out basic standards below | | See Below | Complies |
| EN 55022:2006+A1:2007 | Radiated Emissions | Class B, 30 - 1000 MHz | | Limit | Complies |

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2 Laboratory Information

2.1 Accreditations & Endorsements

2.1.1 NIST / NVLAP



TUV Rheinland of North America is accredited by the National Voluntary Laboratory Accreditation Program, which is administered under the auspices of the National Institute of Standards and Technology. The laboratory has been assessed and accredited in accordance with ISO Standard 17025:2005 (Lab Code: 100411-0). The scope of laboratory accreditation includes emission and immunity testing. The accreditation is updated annually.

2.1.2 Acceptance by Mutual Recognition Arrangement



The United States has an established agreement with specific countries under the Asia Pacific Laboratory Accreditation Corporation (APLAC) Mutual Recognition Arrangement. Under this agreement, all TUV Rheinland at 1279 Quarry Lane, Pleasanton, CA 94566 test results and test reports within the scope of the laboratory NIST / NVLAP accreditation will be accepted by each member country.

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2.2 Test Facilities

All of the test facilities are located at 1279 Quarry Lane, Pleasanton, California 94566, USA.
(2305 Mission College, Santa Clara, 95054, USA location is Pleasanton Annex)

Emission Test Facility

The Semi-Anechoic chamber and AC Line Conducted measurement facility used to collect the radiated and conducted data has been constructed in accordance with ANSI C63.7:1992. The site has been measured in accordance with and verified to comply with the theoretical normalized site attenuation requirements of ANSI C63.4:2003, at test distances of 3 and 10 meters. This site has been described in reports dated November 1st, 2006, submitted to the FCC, and accepted by letter dated November 28, 2006. The site is listed with the FCC and accredited by NVLAP (Lab Code 100411-0).

Immunity Test Facility

ESD, EFT, Surge, PQF: These tests are performed in an environmentally controlled room with a 3.7m x 3.7m x 3.175mm thick aluminum floor connected to PE ground. For ESD testing, tabletop equipment is placed on an insulated mat with a surface resistivity of 10^9 Ohms/square on a 1.6m x 0.8m x 0.8m high non-conductive table with a 3.175mm aluminum top (Horizontal Coupling Plane). The HCP is connected to the main ground plane via a low impedance ground strap through two 470 k Ω resistors. The Vertical Coupling Plane consists of an aluminum plate 50cm x 50cm x 3.175mm thick. The VCP is connected to the main ground plane via a low impedance ground strap through two 470 k Ω resistors. For each of the other tests, the HCP is removed.

RF Field Immunity testing is performed in a 10m semi-anechoic chamber with absorber added to floor.

RF Conducted and Magnetic Field Immunity testing is performed on a 4.9m x 3.7m x 3.175mm thick aluminum ground plane which is connected to one end of the anechoic chamber.

All test areas allow a minimum distance of 1 meter from the EUT to walls or conducting objects

2.3 Measurement Uncertainty

Two types of measurement uncertainty are expressed in this report, per *ISO Guide To The Expression Of Uncertainty In Measurement*, 1st Edition, 1995.

The Combined Standard Uncertainty is the standard uncertainty of the result of a measurement when that result is obtained from the values of a number of other quantities, equal to the positive square root of a sum of terms, the terms being the variances or co-variances of these other quantities weighted according to how the measurement result varies with changes in these quantities. The term standard uncertainty is the result of a measurement expressed as a standard deviation.

The Expanded Uncertainty defines an interval about the result of a measurement that may be expected to encompass a large fraction of the distribution of values that could reasonably be attributed to the measurand. The fraction may be viewed as the coverage probability or level of confidence of the interval.

Sample Calculation – radiated & conducted emissions

The field strength is calculated by subtracting the Amplifier Gain and adding the Cable Loss and Antenna Correction Factor to the measured reading. The basic equation is as follows:

$$\text{Field Strength (dB}\mu\text{V/m)} = \text{RAW} - \text{AMP} + \text{CBL} + \text{ACF}$$

Where: RAW = Measured level before correction (dB μ V)

AMP = Amplifier Gain (dB)

CBL = Cable Loss (dB)

ACF = Antenna Correction Factor (dB/m)

$$\mu\text{V/m} = 10^{\frac{\text{dB}\mu\text{V} / \text{m}}{20}}$$

Sample radiated emissions calculation @ 30 MHz

Measurement +Antenna Factor–Amplifier Gain+Cable loss=Radiated Emissions (dBuV/m)

$$25 \text{ dBuV/m} + 17.5 \text{ dB} - 20 \text{ dB} + 1.0 \text{ dB} = 23.5 \text{ dBuV/m}$$

Table 1: Summary of Uncertainties - Emissions

| | U_{lab} | U_{cispr} |
|-----------------------------------|------------------------|--------------------------|
| Radiated Disturbance @ 10m | | |
| 30 MHz – 1,000 MHz | 3.2 dB | 5.2 dB |

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2.4 Calibration Traceability

All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST). Measurement method complies with ANSI/NCSL Z540-1-1994 and ISO Standard 17025:2005. Equipment calibration records are kept on file at the test facility.

2.5 Measurement Equipment Used

| Equipment | Manufacturer | Model # | Serial/Inst # | Last Cal dd/mm/yy | Next Cal dd/mm/yy | Test |
|-------------------------------------|--------------|---------|---------------|----------------------|----------------------|------|
| EMI Receiver (Receiver Section) | HP | 85462A | 3807A00445 | 01/20/2010 | 01/20/2011 | RE |
| EMI Receiver (RF Filter Section) | HP | 85460A | 3704A00407 | 01/20/2010 | 01/20/2011 | RE |
| 9 kHz – 1 GHz Ant. Preamplifier | Sonoma | 310N | 185516 | 1/20/2010 | 1/20/2011 | RE |
| Bilog Antenna Emissions | EMCO | 3142 | 9701-1117 | 07/14/2010 | 07/14/2011 | RE |

Note: CE = Conducted Emissions, CI= Conducted Immunity, DP=Disturbance Power, EFT=Electrical Fast Transients, ESD = Electrostatic Discharge, FLI=Flicker, HAR=Harmonics, MF=Magnetic Field Immunity, RE=Radiated Emissions, RI=Radiated Immunity, SI=Surge Immunity, VDSI=Voltage Dips and Short Interruptions

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3 Product Information

3.1 Product Description

See Section 6.4.

3.2 Equipment Modifications and Test Setup

None.

3.3 Test Plan

The EUT product information, test configuration, mode of operation, test types, test procedures, test levels, pass/failure criteria, in this report were carried out per the product test plan located in Appendix A of this report

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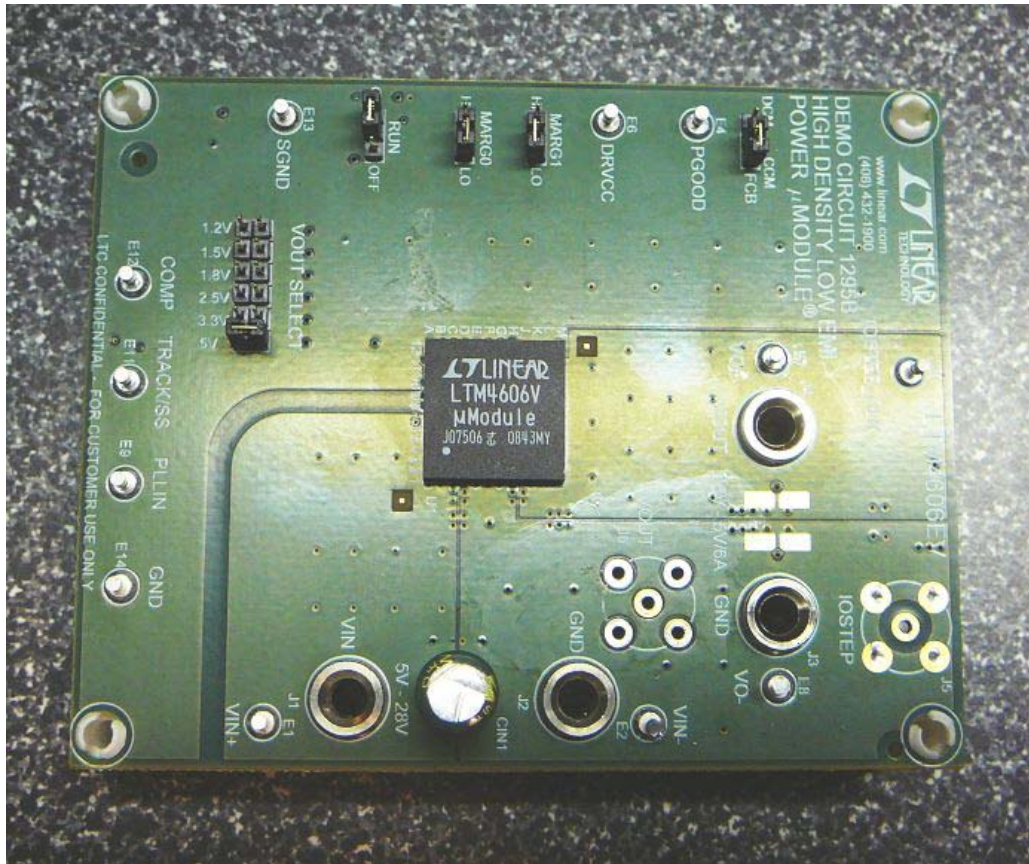


Figure 1 – Photo of EUT with Fixture – Front

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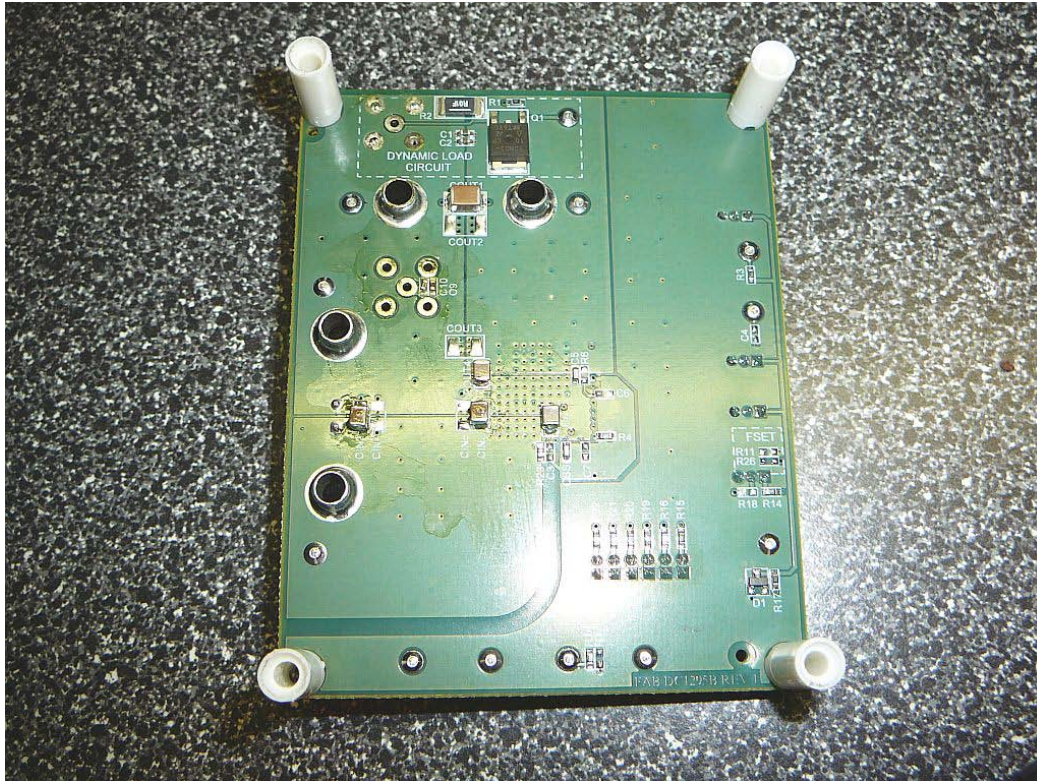


Figure 2 – Photo of EUT with Fixture – Back

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4 Emissions

4.1 Radiated Emissions

This test measures the electromagnetic levels of spurious signals generated by the EUT that radiated from the EUT and may affect the performance of other nearby electronic equipment.

4.1.1 Overview of Test

| | | | |
|------------------------|---|---------------------------|---------------------------------|
| Results | Complies (as tested per this report) | Date | December 6 th , 2010 |
| Standard | EN 55022:2006+A1:2007 | | |
| Product Model | LTM4606 | Serial# | None |
| Configuration | See test plan for details. | | |
| Test Set-up | Tested in 10m chamber, placed on turn-table, see test plan for details. | | |
| EUT Powered By | 5 - 28 Vdc | | |
| Frequency Range | 30 – 1000 MHz @ 10m | | |
| Perf. Criteria | Class B (Below Limit) | Perf. Verification | Readings Under Limit |
| Mod. to EUT | None | Test Performed By | Jack Plotner |

4.1.2 Test Procedure

Radiated emissions tests were performed using the procedures of ANSI C63.4 including methods for signal maximizations and EUT configuration. The photos included with the report show the EUT in its maximized configuration.

The frequency range from 30 – 1000 MHz was investigated for radiated emissions on all configurations.

4.1.3 Deviations

There were no deviations from the test methodology listed in the test plan for the radiated emission test.

4.1.4 Final Test

All final radiated emissions measurements were below (in compliance) the limits.

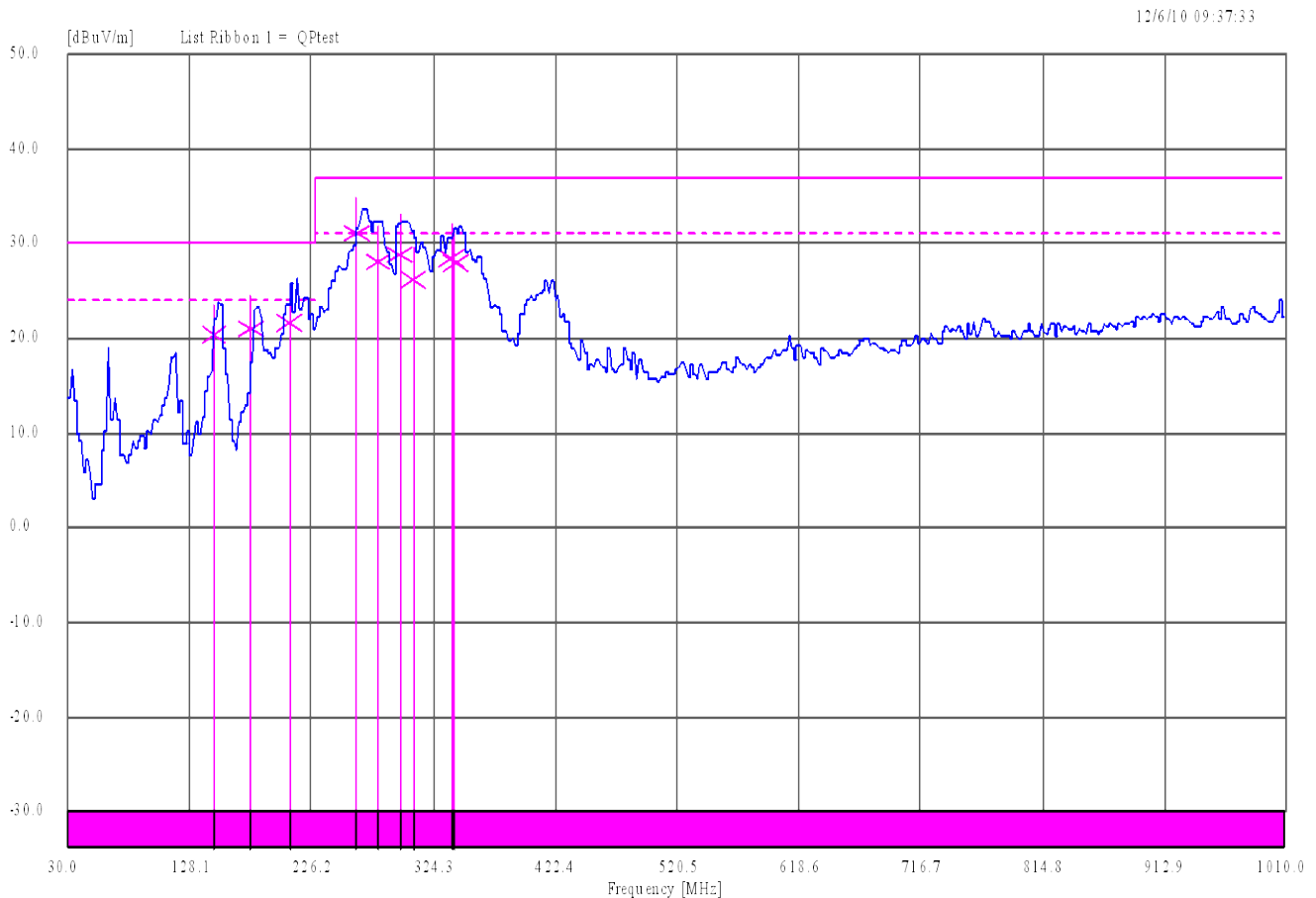
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4.1.5 Final Graphs

NOTES: 28 Vdc Input / 5 Vdc Output @ 5 Amps

Radiated Emissions 30 – 1000 MHz

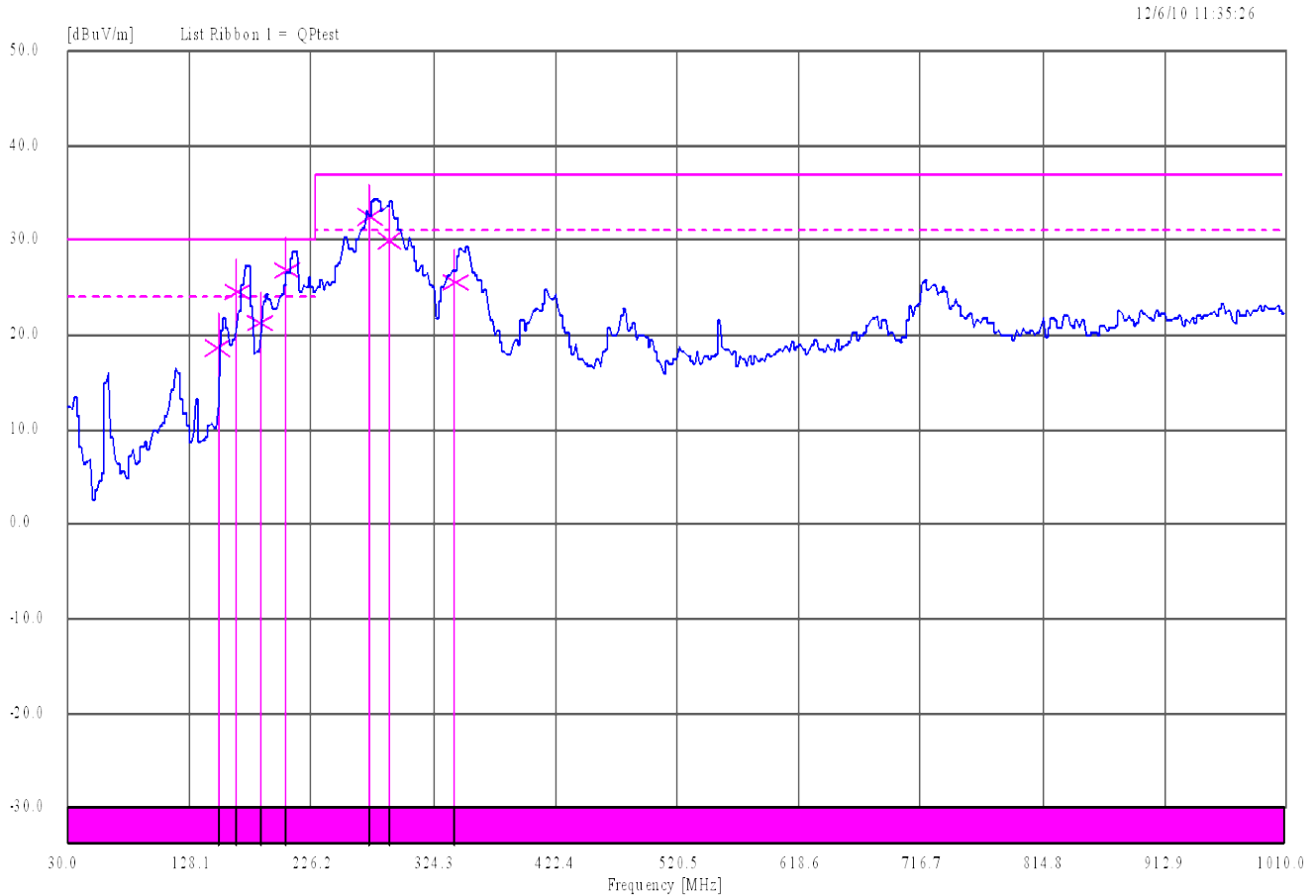
Vertical / Horizontal



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NOTES: 12 Vdc Input / 5 Vdc Output @ 6 Amps

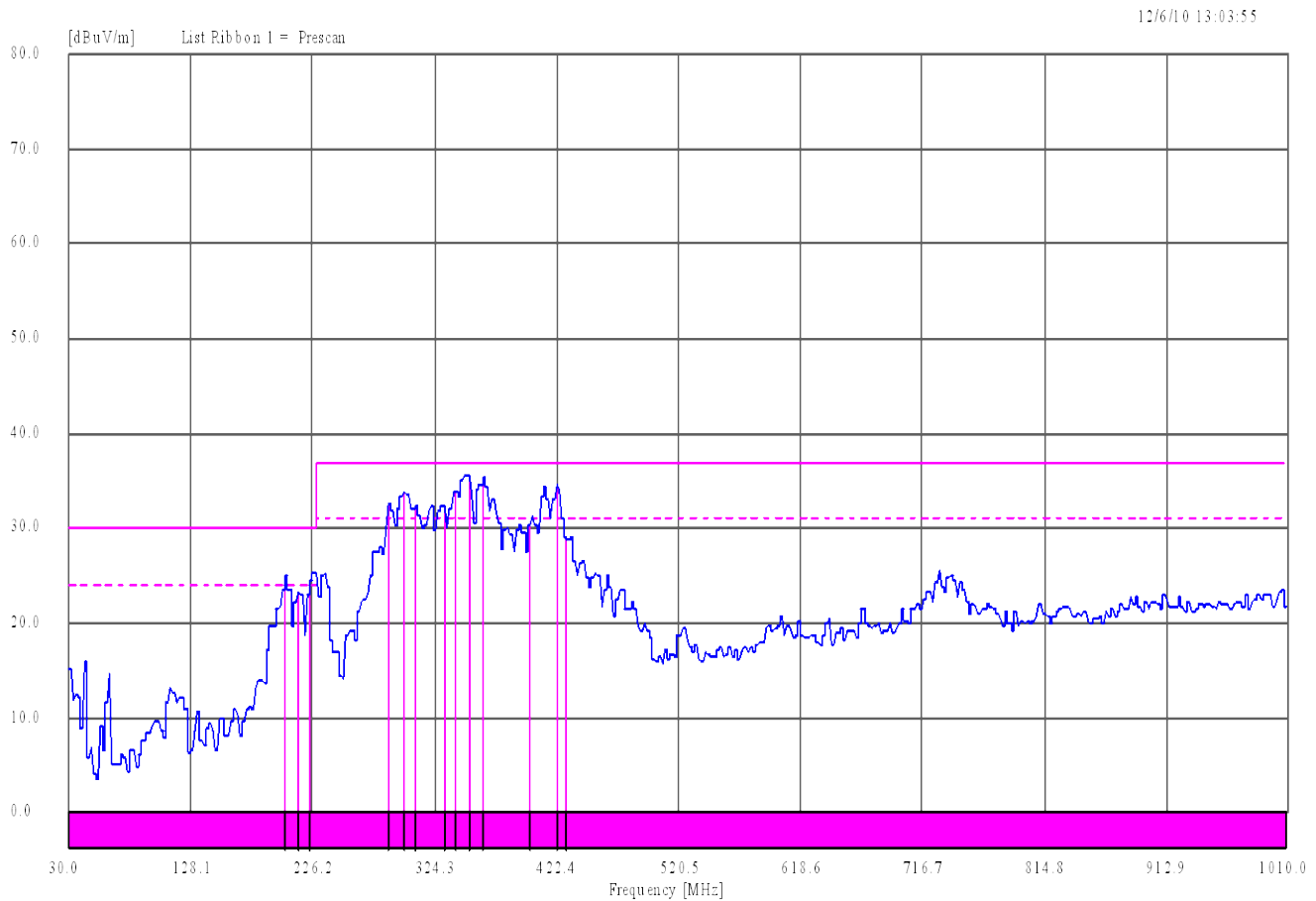
Radiated Emissions 30 – 1000 MHz
Vertical / Horizontal



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NOTES: 28 Vdc Input / 2.5 Vdc Output @ 6 Amps

Radiated Emissions 30 – 1000 MHz
Vertical / Horizontal

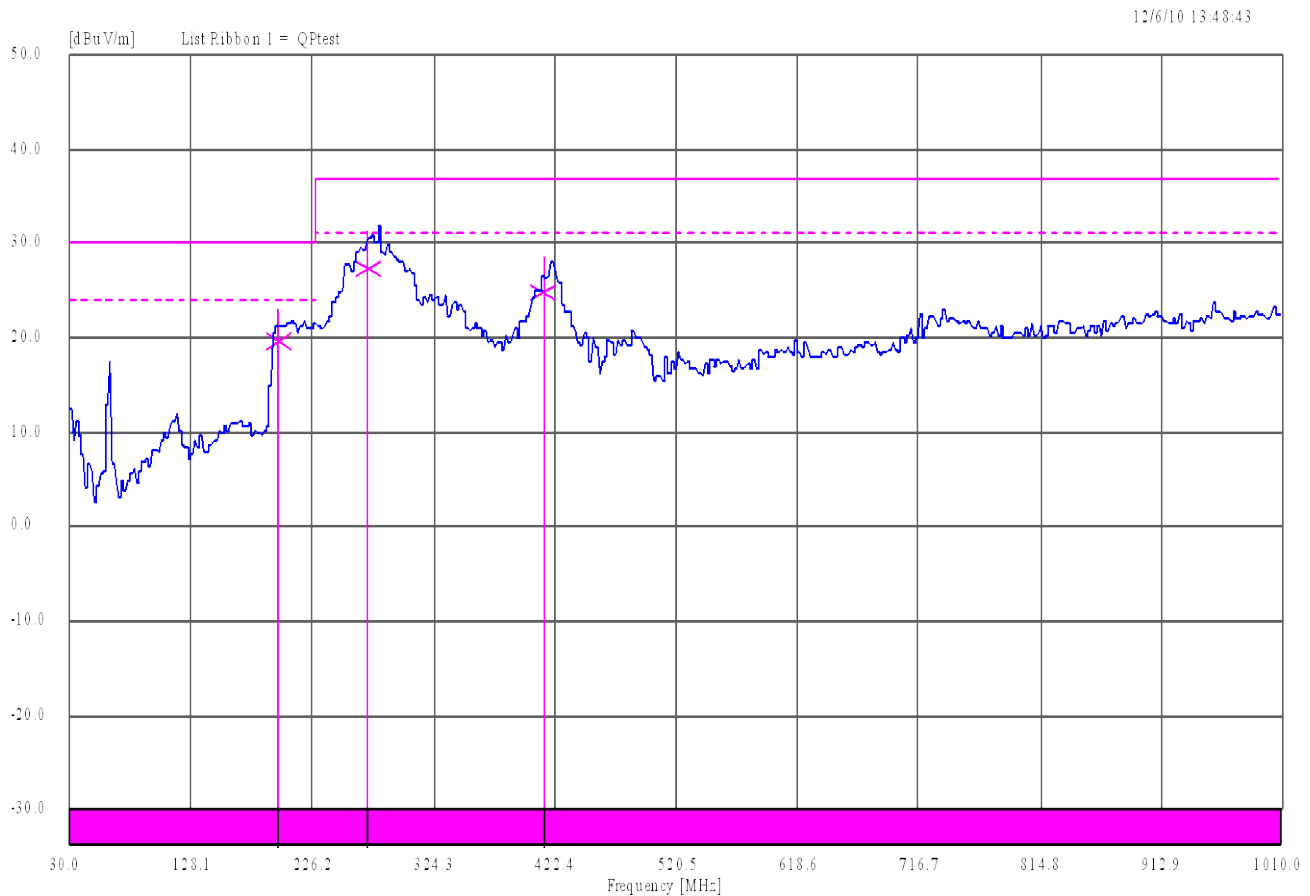


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NOTES: 12 Vdc Input / 2.5 Vdc Output @ 6 Amps

Radiated Emissions 30 – 1000 MHz

Vertical / Horizontal

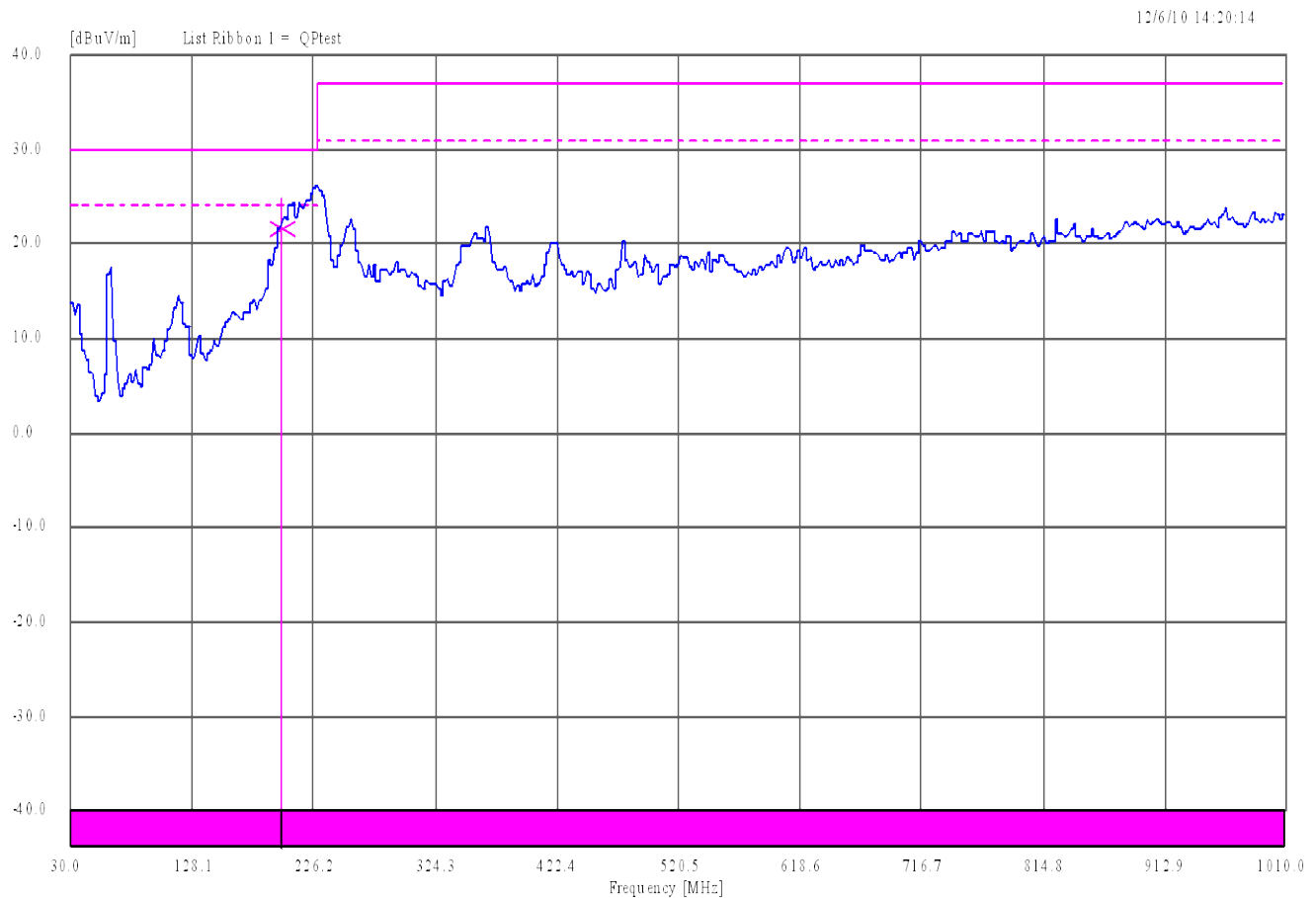


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NOTES: 5 Vdc Input / 2.5 Vdc Output @ 6 Amps

Radiated Emissions 30 – 1000 MHz

Vertical / Horizontal

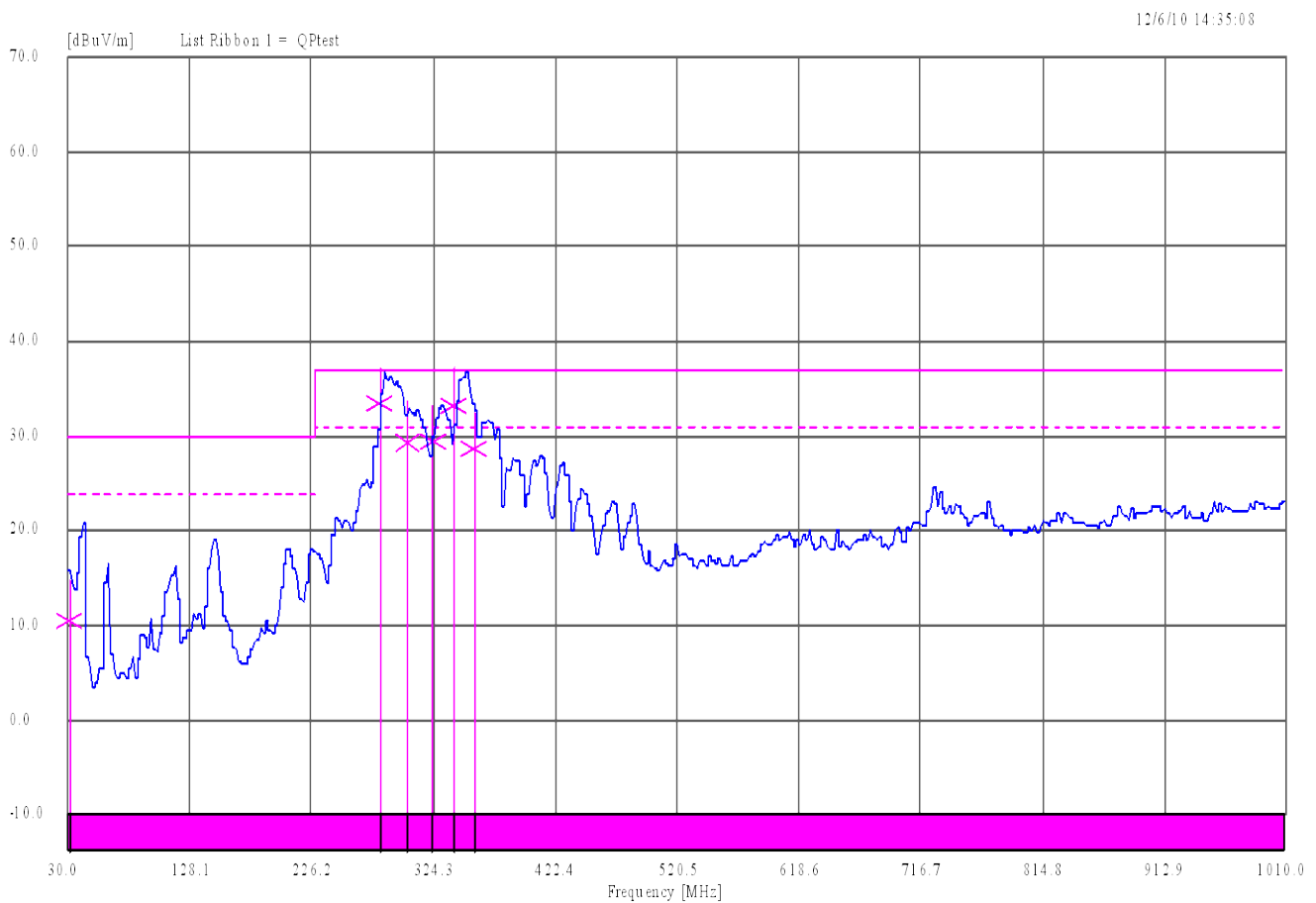


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NOTES: 28 Vdc Input / 1.2 Vdc Output @ 6 Amps

Radiated Emissions 30 – 1000 MHz

Vertical / Horizontal

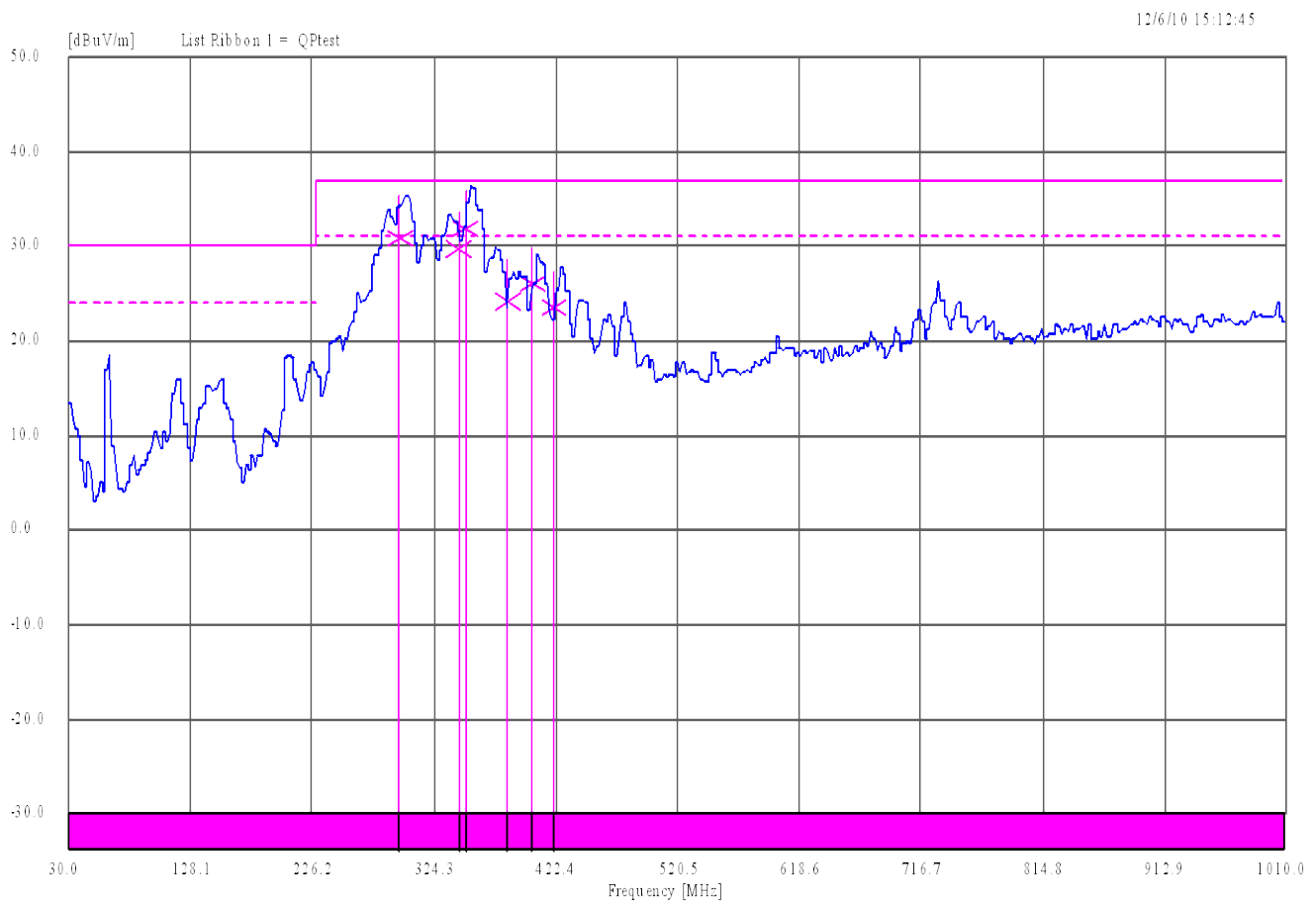


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NOTES: 24 Vdc Input / 1.2 Vdc Output @ 6 Amps

Radiated Emissions 1000 – 6000 MHz

Vertical / Horizontal

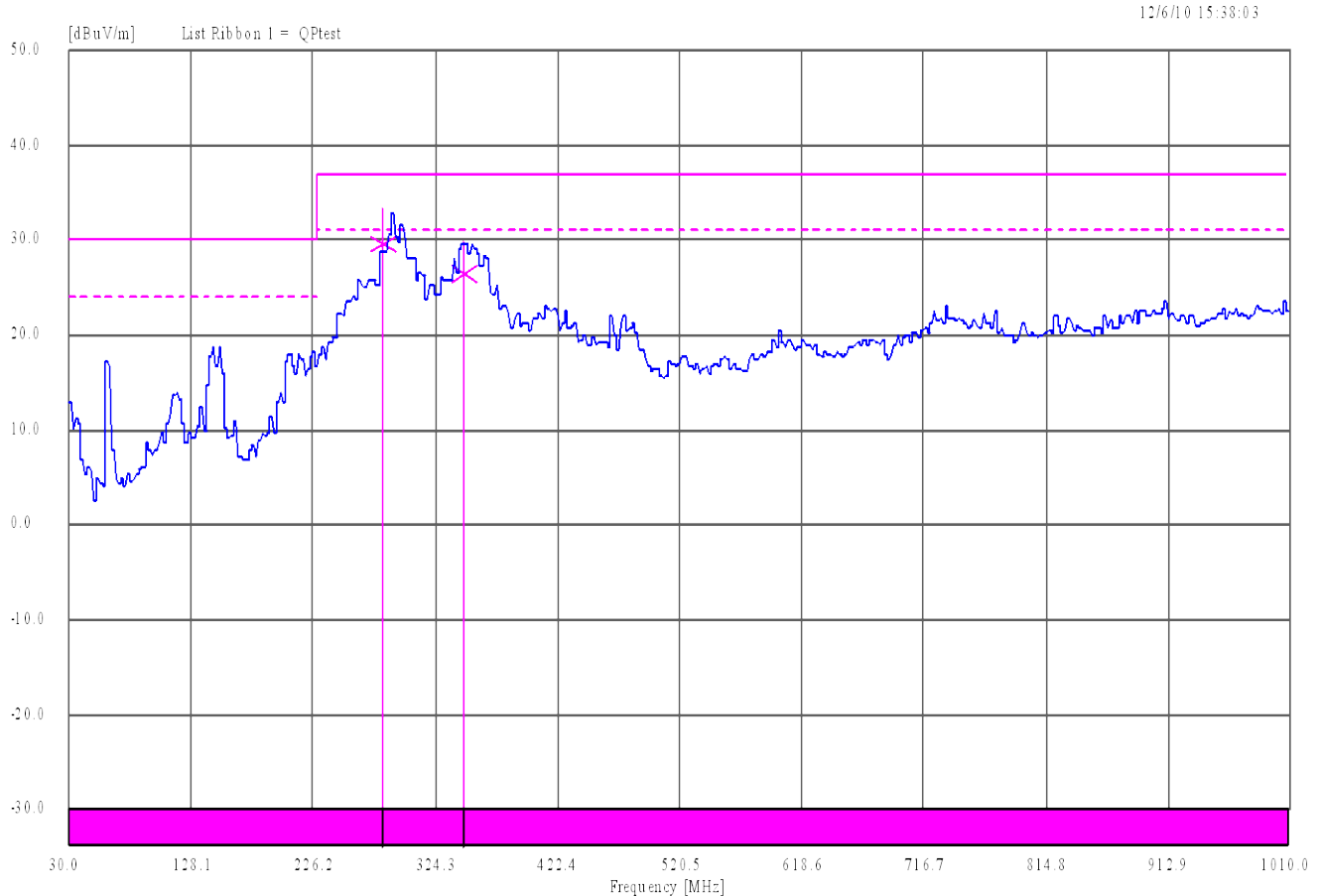


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NOTES: 12 Vdc Input / 1.2 Vdc Output @ 6 Amps

Radiated Emissions 1000 – 6000 MHz

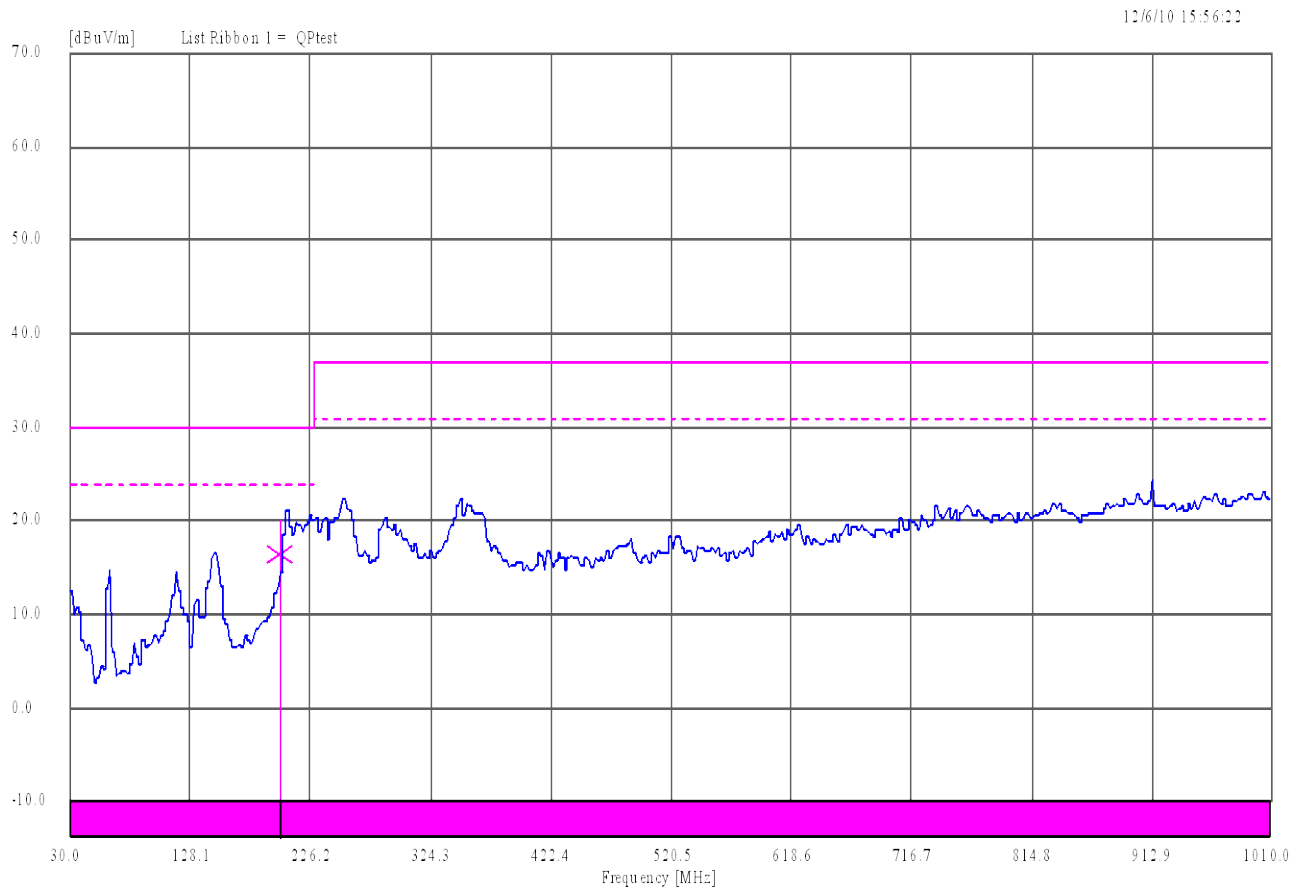
Vertical / Horizontal



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NOTES: 5 Vdc Input / 1.2 Vdc Output @ 6 Amps

Radiated Emissions 1000 – 6000 MHz
Vertical / Horizontal



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4.1.6 Radiated Emissions Scan Tabulated Data

28 Vdc Input / 5 Vdc Output @ 5 Amps

| Frequency | Peak | QP | QP Lmt | QP Margin | Angle | Hgt | Pol | Total Correction Factor |
|------------|--------|--------|--------|-----------|-------|-----|------|-------------------------|
| MHz | dBuV/m | dBuV/m | dBuV/m | dB | deg | cm | | |
| 147.743273 | 23.51 | 20.36 | 30.00 | -9.64 | 211 | 106 | Vert | -12.96 |
| 176.798321 | 24.61 | 20.98 | 30.00 | -9.02 | 177 | 322 | Horz | -11.37 |
| 208.324446 | 25.43 | 21.66 | 30.00 | -8.34 | 64 | 102 | Vert | -10.35 |
| 262.231747 | 34.77 | 31.16 | 37.00 | -5.84 | 304 | 397 | Horz | -8.03 |
| 280.116415 | 31.93 | 28.07 | 37.00 | -8.93 | 117 | 106 | Vert | -7.44 |
| 297.094874 | 33.07 | 28.83 | 37.00 | -8.17 | 130 | 105 | Vert | -8.04 |
| 308.033536 | 29.71 | 26.22 | 37.00 | -10.78 | 131 | 232 | Vert | -6.78 |
| 339.041928 | 32.03 | 28.48 | 37.00 | -8.52 | 188 | 198 | Horz | -5.66 |
| 342.127680 | 31.27 | 27.92 | 37.00 | -9.08 | 175 | 190 | Horz | -5.19 |

12 Vdc Input / 5 Vdc Output @ 6 Amps

| Frequency | Peak | QP | QP Lmt | QP Margin | Angle | Hgt | Pol | Total Correction Factor |
|------------|--------|--------|--------|-----------|-------|-----|------|-------------------------|
| MHz | dBuV/m | dBuV/m | dBuV/m | dB | deg | cm | | |
| 150.429734 | 22.22 | 18.59 | 30.00 | -11.41 | 118 | 397 | Horz | -12.57 |
| 165.946920 | 28.02 | 24.61 | 30.00 | -5.39 | 216 | 126 | Vert | -12.13 |
| 185.214889 | 24.64 | 21.28 | 30.00 | -8.72 | 177 | 331 | Horz | -11.05 |
| 206.452449 | 30.29 | 26.83 | 30.00 | -3.17 | 79 | 100 | Vert | -10.37 |
| 272.696718 | 35.82 | 32.49 | 37.00 | -4.51 | 94 | 105 | Vert | -7.48 |
| 288.445872 | 33.40 | 29.95 | 37.00 | -7.05 | 99 | 103 | Vert | -8.17 |
| 341.619996 | 29.11 | 25.48 | 37.00 | -11.52 | 150 | 210 | Horz | -5.28 |

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28 Vdc Input / 2.5 Vdc Output @ 6 Amps

| Frequency | Peak | QP | QP Lmt | QP Margin | Angle | Hgt | Pol | Total Correction |
|------------|--------|--------|--------|-----------|-------|-----|------|------------------|
| MHz | dBuV/m | dBuV/m | dBuV/m | dB | deg | cm | | Factor |
| 218.775279 | 25.73 | 21.89 | 30.00 | -8.11 | 69 | 165 | Vert | -10.00 |
| 229.078557 | 24.50 | 20.62 | 30.00 | -9.38 | 94 | 197 | Vert | -9.19 |
| 282.200884 | 33.06 | 29.39 | 37.00 | -7.61 | 134 | 359 | Horz | -7.69 |
| 293.227690 | 34.42 | 30.40 | 37.00 | -6.60 | 150 | 278 | Horz | -8.24 |
| 341.508027 | 35.34 | 31.37 | 37.00 | -5.63 | 154 | 261 | Horz | -5.31 |
| 344.532075 | 36.99 | 32.98 | 37.00 | -4.02 | 156 | 300 | Horz | -4.73 |
| 353.171822 | 36.58 | 32.81 | 37.00 | -4.19 | 156 | 264 | Horz | -4.38 |

12 Vdc Input / 2.5 Vdc Output @ 6 Amps

| Frequency | Peak | QP | QP Lmt | QP Margin | Angle | Hgt | Pol | Total Correction |
|------------|--------|--------|--------|-----------|-------|-----|------|------------------|
| MHz | dBuV/m | dBuV/m | dBuV/m | dB | deg | cm | | Factor |
| 198.714993 | 23.16 | 19.61 | 30.00 | -10.39 | 37 | 397 | Horz | -10.76 |
| 271.269744 | 31.23 | 27.34 | 37.00 | -9.66 | 131 | 356 | Horz | -7.54 |
| 412.968819 | 28.56 | 24.79 | 37.00 | -12.21 | 326 | 203 | Horz | -3.67 |

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5 Vdc Input / 2.5 Vdc Output @ 6 Amps

| Frequency | Peak | QP | QP Lmt | QP Margin | Angle | Hgt | Pol | Total Correction Factor |
|------------|--------|--------|--------|-----------|-------|-----|------|-------------------------|
| MHz | dBuV/m | dBuV/m | dBuV/m | dB | deg | cm | | |
| 200.759949 | 24.96 | 21.54 | 30.00 | -8.46 | 15 | 397 | Horz | -10.70 |

28 Vdc Input / 1.2 Vdc Output @ 6 Amps

| Frequency | Peak | QP | QP Lmt | QP Margin | Angle | Hgt | Pol | Total Correction Factor |
|------------|--------|--------|--------|-----------|-------|-----|------|-------------------------|
| MHz | dBuV/m | dBuV/m | dBuV/m | dB | deg | cm | | |
| 31.419797 | 14.93 | 10.52* | 30.00 | -19.48 | 67 | 242 | Vert | -5.13 |
| 281.030330 | 37.19 | 33.51 | 37.00 | -3.49 | 160 | 304 | Horz | -7.55 |
| 303.325556 | 33.61 | 29.27 | 37.00 | -7.73 | 174 | 321 | Horz | -7.19 |
| 324.175364 | 33.31 | 29.49 | 37.00 | -7.51 | 339 | 251 | Horz | -6.19 |
| 340.854901 | 37.28 | 33.23 | 37.00 | -3.77 | 154 | 204 | Horz | -5.42 |
| 357.493804 | 32.56 | 28.69 | 37.00 | -8.31 | 351 | 248 | Horz | -4.11 |

24 Vdc Input / 1.2 Vdc Output @ 6 Amps

| Frequency | Peak | QP | QP Lmt | QP Margin | Angle | Hgt | Pol | Total Correction Factor |
|------------|--------|--------|--------|-----------|-------|-----|------|-------------------------|
| MHz | dBuV/m | dBuV/m | dBuV/m | dB | deg | cm | | |
| 296.285842 | 35.29 | 30.91 | 37.00 | -6.09 | 146 | 301 | Horz | -8.11 |
| 344.216868 | 33.70 | 29.74 | 37.00 | -7.26 | 154 | 268 | Horz | -4.79 |
| 349.227943 | 35.77 | 31.87 | 37.00 | -5.13 | 163 | 308 | Horz | -4.57 |
| 383.690838 | 28.65 | 24.19 | 37.00 | -12.81 | 144 | 262 | Horz | -3.46 |
| 403.206075 | 29.76 | 26.09 | 37.00 | -10.91 | 327 | 235 | Horz | -3.78 |
| 421.273850 | 27.22 | 23.48 | 37.00 | -13.52 | 323 | 225 | Horz | -3.41 |

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12 Vdc Input / 1.2 Vdc Output @ 6 Amps

| Frequency | Peak | QP | QP Lmt | QP Margin | Angle | Hgt | Pol | Total Correction Factor |
|------------|--------|--------|--------|-----------|-------|-----|------|-------------------------|
| MHz | dBuV/m | dBuV/m | dBuV/m | dB | deg | cm | | |
| 282.115078 | 33.27 | 29.60 | 37.00 | -7.40 | 150 | 346 | Horz | -7.68 |
| 347.629774 | 29.93 | 26.45 | 37.00 | -10.55 | 163 | 256 | Horz | -4.60 |

5 Vdc Input / 1.2 Vdc Output @ 6 Amps

| Frequency | Peak | QP | QP Lmt | QP Margin | Angle | Hgt | Pol | Total Correction Factor |
|------------|--------|--------|--------|-----------|-------|-----|------|-------------------------|
| MHz | dBuV/m | dBuV/m | dBuV/m | dB | deg | cm | | |
| 201.211867 | 20.04 | 16.44 | 30.00 | -13.56 | 188 | 397 | Horz | -10.67 |

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4.1.7 Photos



Figure 3 – Radiated Emissions Test Setup – Front

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Figure 4 – Radiated Emissions 30 - 1000 MHz Test Setup – Back

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Appendix A

5 Test Plan

This test report is intended to follow this test plan outlined here in unless other wise stated in this here report. The following test plan will give details on product information, standards to be used, test set ups and refer to TUV test procedures. The test procedures will give the steps to be taken when performing the stated test. The product information below came via client, product manual, product itself and or the internet.

5.1 General Information

| | |
|-----------------------|--------------------------------|
| Client | Linear Technology Corporation. |
| Address | 1630 McCarthy Blvd. |
| Address | Milpitas, CA 95035 |
| Contact Person | Eddie Beville |
| Telephone | (408) 432-1900 Extension 3007 |
| Fax | (408) 434-0507 |
| e-mail | ebeville@linear.com |

5.2 Model(s) Name

LTM4606

5.3 Type of Product

DC DC Converter

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5.4 Equipment Under Test (EUT) Description

The LTM4606 is an ultra low noise, high voltage, 6 A switching mode DC/DC power supply. The onboard input filter and noise cancellation circuits achieve low noise operation, thus effectively reducing the electromagnetic interference (EMI).

5.5 Modifications

None

5.6 Product Environment

| | | | |
|-------------------------------------|-------------------------|--------------------------|------------------------|
| <input checked="" type="checkbox"/> | Residential | <input type="checkbox"/> | Hospital |
| <input checked="" type="checkbox"/> | Light Industrial | <input type="checkbox"/> | Small Clinic |
| <input checked="" type="checkbox"/> | Industrial | <input type="checkbox"/> | Doctor's office |
| <input type="checkbox"/> | Other | | |

*Check all that apply

5.7 Countries

| | |
|-------------------------------------|---------------|
| <input type="checkbox"/> | USA |
| <input type="checkbox"/> | Taiwan |
| <input type="checkbox"/> | Japan |
| <input checked="" type="checkbox"/> | Europe |

*Check all that apply

5.8 Applicable Documents

| Standards | Description |
|-----------------------|--------------------|
| EN 55022:2006+A1:2007 | Radiated Emissions |

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5.9 EUT Electrical Powered Information

5.9.1 Electrical Power Type

| | | | | | | | |
|--------------------------|----|-------------------------------------|----|--------------------------|-----------|--------------------------|--------|
| <input type="checkbox"/> | AC | <input checked="" type="checkbox"/> | DC | <input type="checkbox"/> | Batteries | <input type="checkbox"/> | Host - |
|--------------------------|----|-------------------------------------|----|--------------------------|-----------|--------------------------|--------|

5.9.2 Electrical Power Information

| Name | Type | Voltage | | Frequency | Current | Notes |
|-----------|------|---------|------|-----------|-------------------|-------|
| | | min | max | | | |
| DC Input | DC | 4.5 | 28.0 | 800 kHz | Load Dependent | |
| DC Output | DC | 0.6 | 5 | 800 kHz | 6 A Max | |
| Notes | None | | | | | |

5.9.3 EUT Modes of Operation

One.

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5.10 EUT Clock/Oscillator Frequencies

| | | |
|-------------------------------------|-----------------------|---|
| <input checked="" type="checkbox"/> | Less than 108 MHz | FCC – scan up to 1 GHz |
| <input type="checkbox"/> | Less than 500 MHz | FCC – scan up to 2 GHz |
| <input type="checkbox"/> | Less than 1000 MHz | FCC – scan up to 5 GHz |
| <input type="checkbox"/> | Greater than 1000 MHz | FCC – scan up to 5 th Harmonic or 40 GHz |

5.11 Electrical Support Equipment

| Type | Manufacture | Model | Connected To |
|----------------|-------------|----------|--------------|
| Power Supply | Lambda | LP532-FM | EUT input |
| Load Resistors | N/A | N/A | EUT Output |

5.12 EUT Equipment/Cabling Information

| EUT Port | Connected To | Location | Cable Type | | |
|----------|----------------|----------------|------------|----------|------|
| | | | Length | Shielded | Bead |
| VIN | Power Supply | Inside Chamber | 1 meter | No | No |
| VOUT | Resistive Load | Inside Chamber | 0.2 meters | No | No |

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5.13 EUT Test Program

None

5.14 Monitoring of EUT during Testing

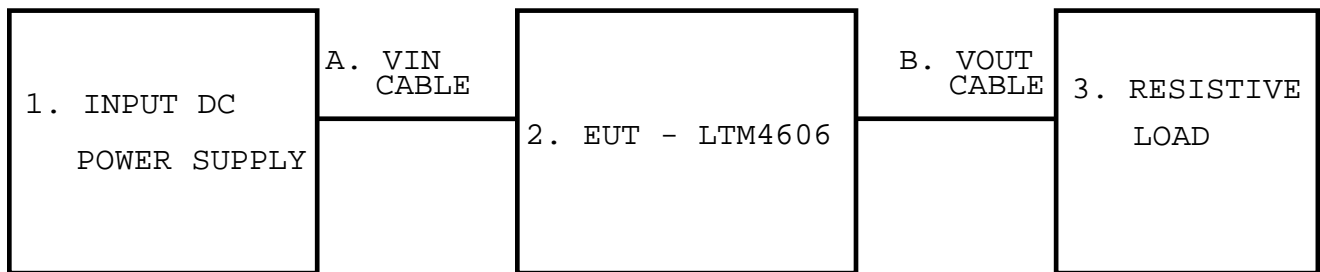
For Emissions testing the EUT output voltage is checked during the test.

5.15 EUT Configuration**5.15.1 Description**

| Configuration | Description |
|---------------|--|
| One | Installed on 24 Vdc Out demo circuit board. |
| Notes | All configurations tested with a resistive load. |

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5.15.2 Block Diagram



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5.16 Emissions

5.16.1 Radiated Emissions

5.16.1.1 Final Radiated Emissions Test Set-up

| | | | | | |
|------------------------|---------------------------------|-------------------------------|---------------------------|-----------------------|-------------------|
| Standard | EN 55022:2006 +A1:2007 | | TUV Test Procedure | | QP093006 |
| Limit | Class B | Emissions Verification | | Emissions Under Limit | |
| Frequency Range | 30 – 1000 MHz | Ant Dist | 10m | Det | QP 30 – 1000 MHz, |
| Scan #1 | Configuration 1 (30 – 1000 MHz) | | | | |
| Configuration | See Section 5.16 | | | | |

END OF REPORT

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