

Lightspeed Technologies, Inc.

AMP-CAV

Report No. LITS0005.1

Report Prepared By



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

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EMC Test Report



22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

Certificate of Test
Last Date of Test: June 1, 2010
Lightspeed Technologies, Inc.
Model: AMP-CAV

| Emissions | | | |
|----------------------------------|-----------------|------------------|-----------|
| Test Description | Specification | Test Method | Pass/Fail |
| Occupied Bandwidth | FCC 15.247:2010 | ANSI C63.10:2009 | Pass |
| Output Power | FCC 15.247:2010 | ANSI C63.10:2009 | Pass |
| Band Edge Compliance | FCC 15.247:2010 | ANSI C63.10:2009 | Pass |
| Spurious Conducted Emissions | FCC 15.247:2010 | ANSI C63.10:2009 | Pass |
| Power Spectral Density | FCC 15.247:2010 | ANSI C63.10:2009 | Pass |
| Spurious Radiated Emissions | FCC 15.247:2010 | ANSI C63.10:2009 | Pass |
| AC Powerline Conducted Emissions | FCC 15.207:2010 | ANSI C63.10:2009 | Pass |
| Pulse Duration | FCC 15.247:2010 | ANSI C63.10:2009 | Pass |

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 (Site filing #2834D-2).

Approved By:

Don Facteau, IS Manager



NVLAP Lab Code: 200630-0

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 | | |

Barometric Pressure

The recorded barometric pressure has been normalized to sea level.



Accreditations and Authorizations

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 accredited 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 2004/108/EC, and ANSI C63.4. 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.



NVLAP LAB CODE 200629-0
NVLAP LAB CODE 200630-0
NVLAP LAB CODE 200676-0
NVLAP LAB CODE 200761-0
NVLAP LAB CODE 200881-0

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-Gen, Issue 2 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. (*Site Filing Numbers - Hillsboro: 2834D-1, 2834D-2, Sultan: 2834C-1, Irvine: 2834B-1, 2834B-2, Brooklyn Park: 2834E-1*)



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.



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).



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, R-1025, G-84, C-2687, T-1658, and R-2318, Irvine: R-1943, G-85, C-2766, and T-1659, Sultan: R-871, G-83, C-1784, and T-1511, Brooklyn Park: R-3125, G-86, G-141, C-3464, and T-1634).



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 (US0017). 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



KCC

Northwest EMC, Inc is a CAB designated by MRA partners and recognized by Korea. (Assigned Lab Numbers: Hillsboro: US0017, Irvine: US0158, Sultan: US0157)



VIETNAM

Vietnam MIC has approved Northwest EMC as an accredited test lab. Per Decision No. 194/QD-QLCL (dated December 15, 2009), Northwest EMC test reports can be used for Vietnam approval submissions.



SCOPE

For details on the Scopes of our Accreditations, please visit:

<http://www.nwemc.com/accreditations/>



Northwest EMC Locations



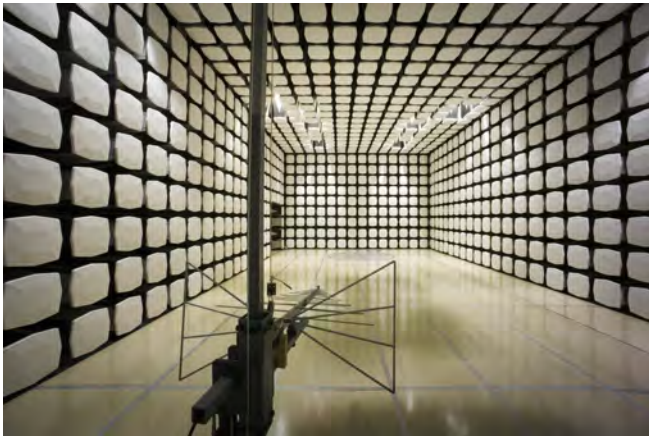
Oregon
Labs EV01-EV12
22975 NW Evergreen Pkwy
Suite 400
Hillsboro, OR 97124
(503) 844-4066

California
Labs OC01-OC13
41 Tesla
Irvine, CA 92618
(949) 861-8918

Minnesota
Labs MN01-MN08
9349 W Broadway Ave.
Brooklyn Park,
MN 55445
(763) 425-2281

Washington
Labs SU01-SU07
14128 339th Ave. SE
Sultan, WA 98294
(360) 793-8675

New York
Labs WA01-WA04
4939 Jordan Rd.
Elbridge, NY 13060
(315) 685-0796



Party Requesting the Test

| | |
|---------------------------------|-------------------------------|
| Company Name: | Lightspeed Technologies, Inc. |
| Address: | 11509 SW Herman Rd |
| City, State, Zip: | Tualatin, OR 97062 |
| Test Requested By: | Dave Jordahl |
| Model: | AMP-CAV |
| First Date of Test: | May 25, 2010 |
| Last Date of Test: | May 28, 2010 |
| Receipt Date of Samples: | May 25, 2010 |
| Equipment Design Stage: | Preproduction |
| Equipment Condition: | No Damage |

Information Provided by the Party Requesting the Test**Functional Description of the EUT (Equipment Under Test):**

2.4 GHz DTS radio device

Testing Objective:

To demonstrate compliance to FCC 15.247 requirements.

CONFIGURATION 2 LITS0005

| Software/Firmware Running during test | |
|---------------------------------------|------------|
| Description | Version |
| MS Hyperterminal | 5.1 |
| LightSPEED Diagnostic Utility | 2009, 2010 |

| EUT | | | |
|----------------------|-------------------------------|-------------------|---------------|
| Description | Manufacturer | Model/Part Number | Serial Number |
| Controller/Amplifier | Lightspeed Technologies, Inc. | AMP-CAV | A1019 0021 |

| Remote Equipment Outside of Test Setup Boundary | | | |
|---|--------------|-------------------|---------------|
| Description | Manufacturer | Model/Part Number | Serial Number |
| Control PC | Lenovo | T60 | Unknown |

| Cables | | | | | |
|--|--------|------------|---------|--------------|--------------|
| Cable Type | Shield | Length (m) | Ferrite | Connection 1 | Connection 2 |
| Serial to USB adapter | Yes | 2.0m | No | Controller | PC |
| PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown. | | | | | |

CONFIGURATION 5 LITS0005

| Software/Firmware Running during test | |
|---------------------------------------|---------|
| Description | Version |
| MS Hyperterminal | 5.1 |

| EUT | | | |
|----------------------|-------------------------------|-------------------|---------------|
| Description | Manufacturer | Model/Part Number | Serial Number |
| Controller/Amplifier | Lightspeed Technologies, Inc. | AMP-CAV | A1019 0017 |

| Peripherals in test setup boundary | | | |
|------------------------------------|-------------------------------|-------------------|---------------|
| Description | Manufacturer | Model/Part Number | Serial Number |
| Control PC | Lenovo | T60 | Unknown |
| AC Power Supply | Lightspeed Technologies, Inc. | DSA-60W-20 1 | None |
| IR Receiver 1 | Lightspeed Technologies, Inc. | RX-ISR | 090724-0052 |
| IR Receiver 2 | Lightspeed Technologies, Inc. | RX-ISR | 090724-0061 |

| Cables | | | | | |
|--|--------|------------|---------|----------------------|----------------------|
| Cable Type | Shield | Length (m) | Ferrite | Connection 1 | Connection 2 |
| DC Power | PA | 1.8m | PA | AC Power Supply | Controller/Amplifier |
| AC Mains | No | 1.8m | No | AC Power Supply | AC Mains |
| Speaker A | No | 1.0m | No | Controller/Amplifier | Unterminated |
| Speaker B | No | 1.0m | No | Controller/Amplifier | Unterminated |
| ISR1 | No | 1.0m | No | Controller/Amplifier | IR Receiver 1 |
| ISR2 | No | 1.0m | No | Controller/Amplifier | IR Receiver 2 |
| Audio (RJ-45) | No | 1.0m | No | Controller/Amplifier | Unterminated |
| Serial to USB adapter | Yes | 2.0m | No | Controller | PC |
| PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown. | | | | | |

CONFIGURATION 6 LITS0005**Software/Firmware Running during test**

| Description | Version |
|------------------|---------|
| MS Hyperterminal | 5.1 |

EUT

| Description | Manufacturer | Model/Part Number | Serial Number |
|----------------------|-------------------------------|-------------------|---------------|
| Controller/Amplifier | Lightspeed Technologies, Inc. | AMP-CAV | A1019 0017 |

Peripherals in test setup boundary

| Description | Manufacturer | Model/Part Number | Serial Number |
|-----------------|-------------------------------|-------------------|---------------|
| AC Power Supply | Lightspeed Technologies, Inc. | DSA-60W-20 1 | None |
| IR Receiver 1 | Lightspeed Technologies, Inc. | RX-ISR | 090724-0052 |
| IR Receiver 2 | Lightspeed Technologies, Inc. | RX-ISR | 090724-0061 |

Cables

| Cable Type | Shield | Length (m) | Ferrite | Connection 1 | Connection 2 |
|---------------|--------|------------|---------|----------------------|----------------------|
| DC Power | PA | 1.8m | PA | AC Power Supply | Controller/Amplifier |
| AC Mains | No | 1.8m | No | AC Power Supply | AC Mains |
| Speaker A | No | 1.0m | No | Controller/Amplifier | Unterminated |
| Speaker B | No | 1.0m | No | Controller/Amplifier | Unterminated |
| ISR1 | No | 1.0m | No | Controller/Amplifier | IR Receiver 1 |
| ISR2 | No | 1.0m | No | Controller/Amplifier | IR Receiver 2 |
| Audio (RJ-45) | No | 1.0m | No | Controller/Amplifier | Unterminated |

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

| Equipment modifications | | | | | |
|--------------------------------|-----------|----------------------------------|--------------------------------------|---|---|
| Item | Date | Test | Modification | Note | Disposition of EUT |
| 1 | 5/25/2010 | Occupied Bandwidth | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Northwest EMC following the test. |
| 2 | 5/25/2010 | Output Power | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Northwest EMC following the test. |
| 3 | 5/25/2010 | Spurious Conducted Emissions | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Northwest EMC following the test. |
| 4 | 5/25/2010 | Power Spectral Density | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Northwest EMC following the test. |
| 5 | 5/25/2010 | Band Edge Compliance | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Northwest EMC following the test. |
| 6 | 5/25/2010 | Pulse Duration | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Northwest EMC following the test. |
| 7 | 5/27/2010 | AC Powerline Conducted Emissions | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | EUT remained at Northwest EMC following the test. |
| 8 | 5/28/2010 | Spurious Radiated Emissions | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | Scheduled testing was completed. |

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

| TEST EQUIPMENT | | | | | |
|---------------------------------|------------------|----------|-----|------------|----------|
| Description | Manufacturer | Model | ID | Last Cal. | Interval |
| Spectrum Analyzer | Agilent | E4440A | AFD | 6/1/2009 | 24 |
| Attenuator 20 dB, SMA M/F 26GHz | S.M. Electronics | SA26B-20 | AUY | 7/21/2009 | 13 |
| 26 GHz DC Block, SMA | Pasternack | PE8210 | AME | 10/19/2009 | 13 |
| EV06 Direct Connect Cable | ESM Cable Corp. | TT | ECA | NCR | 0 |

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

The occupied bandwidth was measured with the EUT set to low, medium, and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its maximum data rate with the typical modulation.

EMC

OCCUPIED BANDWIDTH

| | | | |
|----------------|-------------------------------|-------------------|-------------|
| EUT: | AMP-CAV | Work Order: | LITS0005 |
| Serial Number: | A1019 0021 | Date: | 05/25/10 |
| Customer: | Lightspeed Technologies, Inc. | Temperature: | 22°C |
| Attendees: | None | Humidity: | 43% |
| Project: | None | Barometric Pres.: | 29.75 in |
| Tested by: | Rod Peloquin | Power: | 120VAC/60Hz |
| | | Job Site: | EV06 |

| | | |
|----------------------------|--|------------------|
| TEST SPECIFICATIONS | | Test Method |
| FCC 15.247:2010 | | ANSI C63.10:2009 |

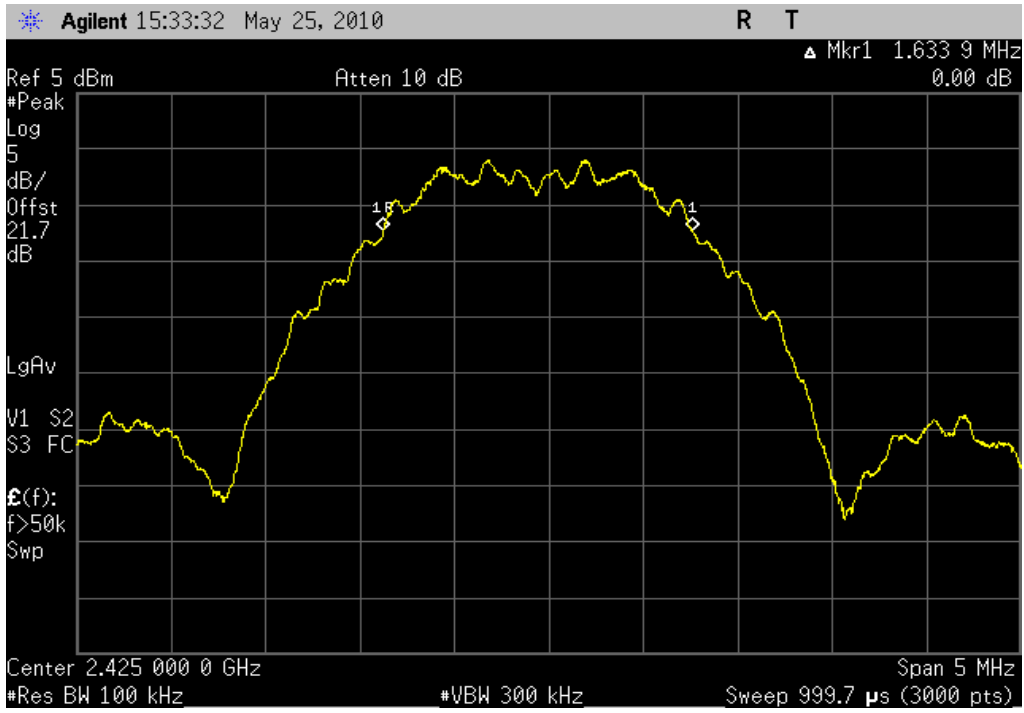
| |
|-----------------|
| COMMENTS |
| None |

| |
|--------------------------------------|
| DEVIATIONS FROM TEST STANDARD |
| No Deviations |

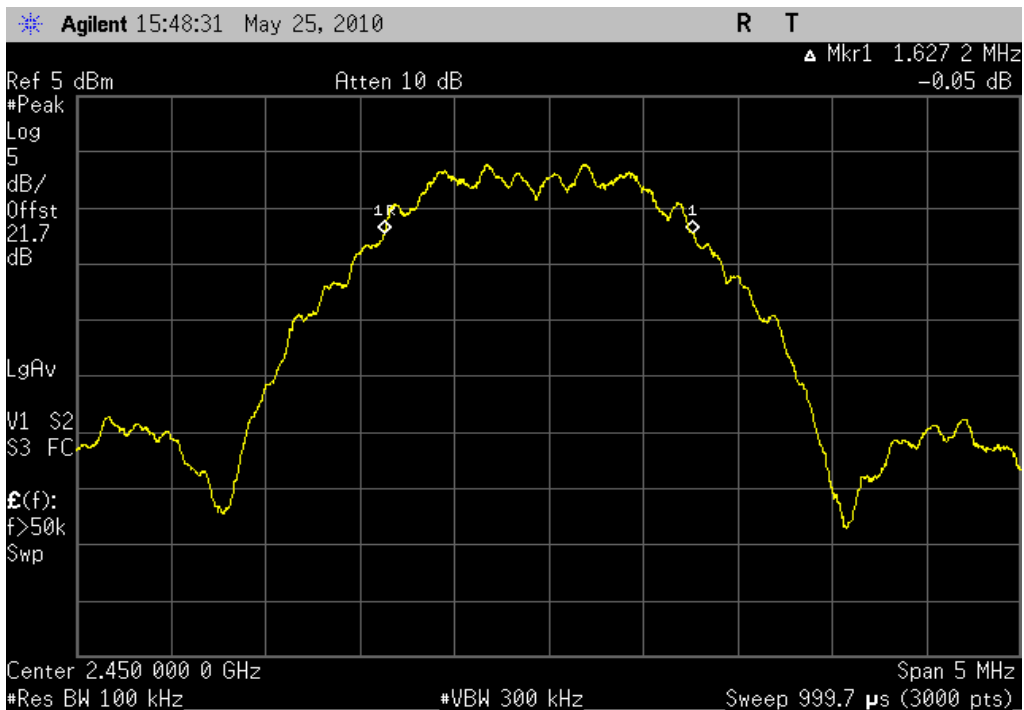
| | | |
|------------------------|---|----------------------------------|
| Configuration # | 2 | <i>Rod Peloquin</i> Signature |
|------------------------|---|----------------------------------|

| | Value | Limit | Results |
|--------------|-----------|-----------|---------|
| Low Channel | 1.634 MHz | > 500 kHz | Pass |
| Mid Channel | 1.627 MHz | > 500 kHz | Pass |
| High Channel | 1.614 MHz | > 500 kHz | Pass |

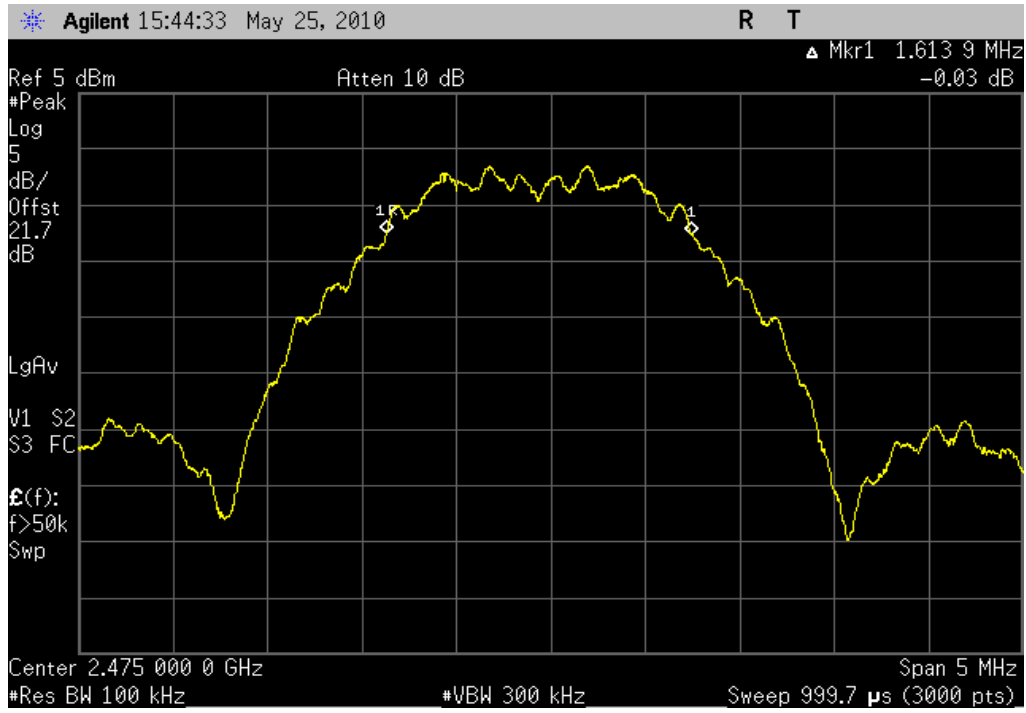
| Low Channel | | |
|---------------------|-------------------------|-------------------------|
| Result: Pass | Value: 1.634 MHz | Limit: > 500 kHz |



| Mid Channel | | |
|---------------------|-------------------------|-------------------------|
| Result: Pass | Value: 1.627 MHz | Limit: > 500 kHz |



| High Channel | | |
|---------------------|-------------------------|-------------------------|
| Result: Pass | Value: 1.614 MHz | Limit: > 500 kHz |



Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

| TEST EQUIPMENT | | | | | |
|---------------------------------|------------------|---------------|-----|------------|----------|
| Description | Manufacturer | Model | ID | Last Cal. | Interval |
| Spectrum Analyzer | Agilent | E4440A | AFD | 6/1/2009 | 24 |
| 26 GHz DC Block, SMA | Pasternack | PE8210 | AME | 10/19/2009 | 13 |
| Attenuator 20 dB, SMA M/F 26GHz | S.M. Electronics | SA26B-20 | AUY | 7/21/2009 | 13 |
| EV06 Direct Connect Cable | ESM Cable Corp. | TT | ECA | NCR | 0 |
| Attenuator, 6 dB, 'SMA' | N/A | 93459 3330A-6 | AUF | 4/1/2010 | 13 |
| Power Meter | Gigatronics | 8651A | SPM | 1/7/2010 | 13 |
| Power Sensor | Gigatronics | 80701A | SPL | 1/7/2010 | 13 |
| Signal Generator | Agilent | E8257D | TGX | 12/10/2008 | 24 |

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

The peak output power was measured with the EUT set to low, medium, and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The EUT was transmitting at its maximum data rate in a no hop mode.

De Facto EIRP Limit: Per 47 CFR 15.247 (b)(1-3), the EUT meets the de facto EIRP limit of +36dBm.

EMC

OUTPUT POWER

| | |
|--|-----------------------------------|
| EUT: AMP-CAV | Work Order: LITS0005 |
| Serial Number: A1019 0021 | Date: 05/25/10 |
| Customer: Lightspeed Technologies, Inc. | Temperature: 22°C |
| Attendees: None | Humidity: 43% |
| Project: None | Barometric Pres.: 29.75 in |
| Tested by: Rod Peloquin | Power: 120VAC/60Hz |
| | Job Site: EV06 |

| | |
|----------------------------|--------------------|
| TEST SPECIFICATIONS | Test Method |
| FCC 15.247:2010 | ANSI C63.10:2009 |

COMMENTS
None

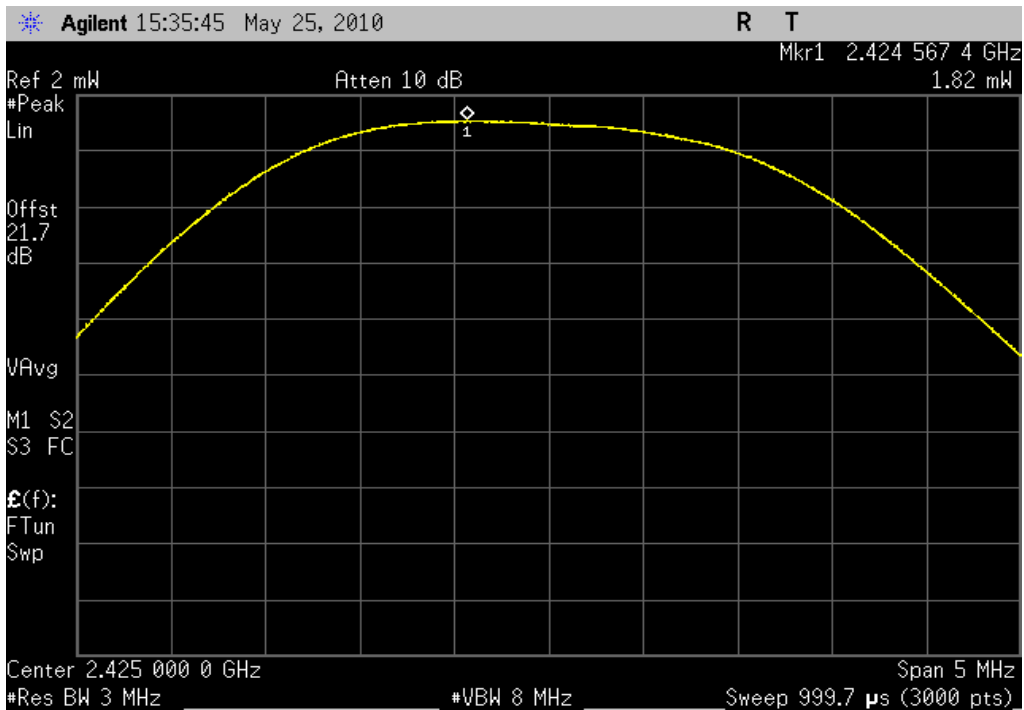
DEVIATIONS FROM TEST STANDARD
No Deviations

| | | |
|------------------------|---|----------------------------------|
| Configuration # | 2 | <i>Rod Peloquin</i> Signature |
|------------------------|---|----------------------------------|

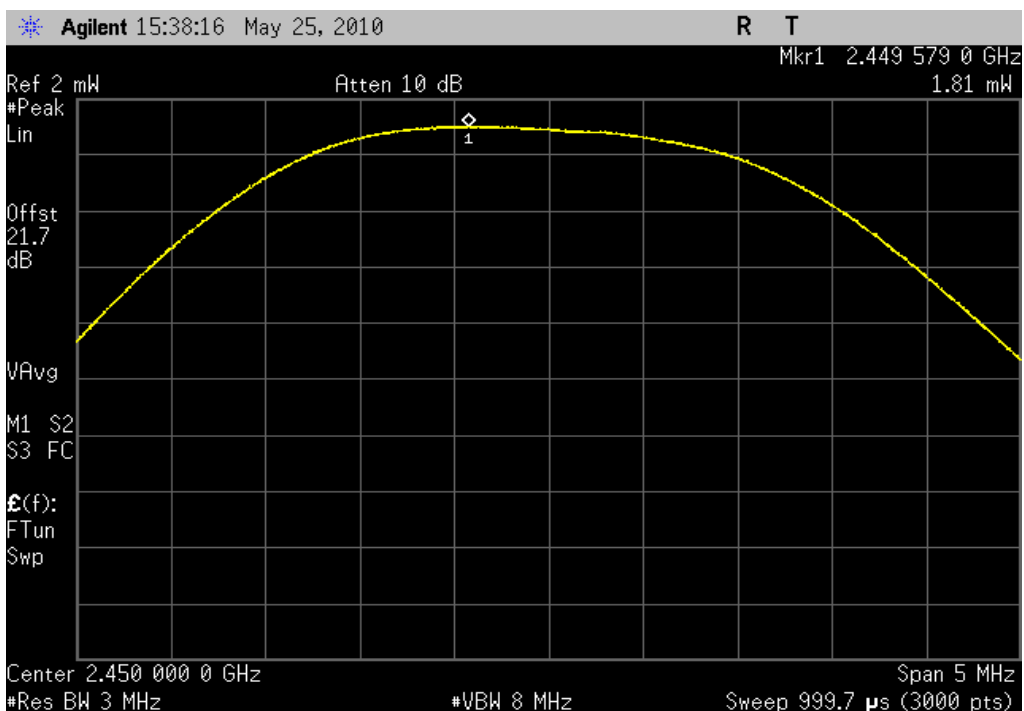
| | Value | Limit | Results |
|--------------|---------|-------|---------|
| Low Channel | 1.82 mW | 1 W | Pass |
| Mid Channel | 1.81 mW | 1 W | Pass |
| High Channel | 1.65 mW | 1 W | Pass |

OUTPUT POWER

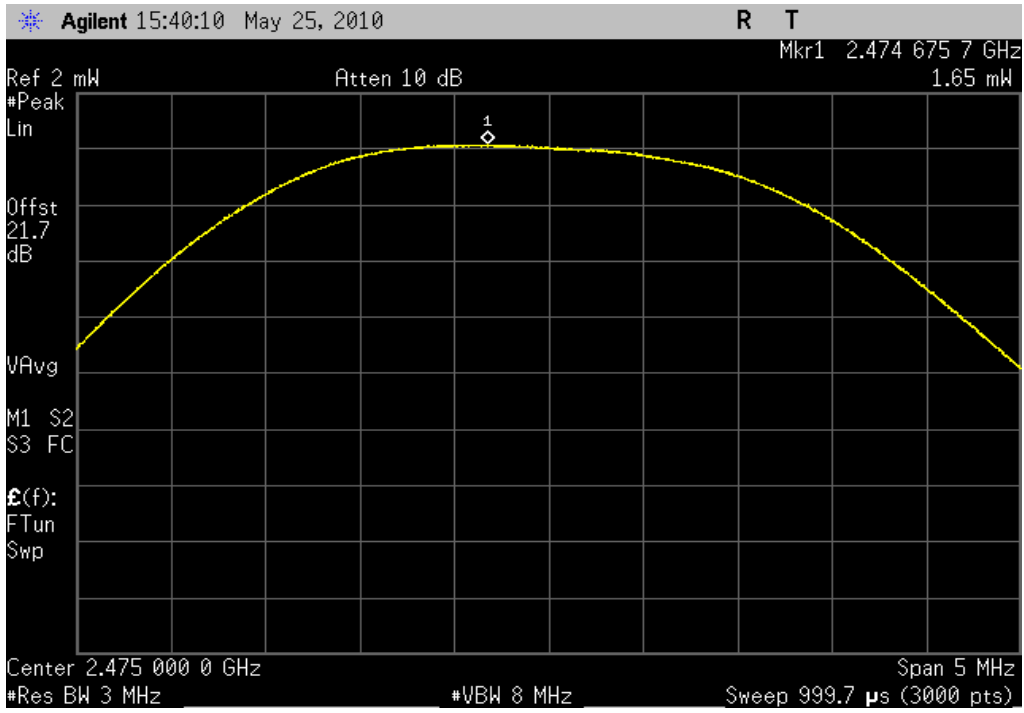
| Low Channel | | |
|---------------------|-----------------------|-------------------|
| Result: Pass | Value: 1.82 mW | Limit: 1 W |



| Mid Channel | | |
|---------------------|-----------------------|-------------------|
| Result: Pass | Value: 1.81 mW | Limit: 1 W |



| | | |
|---------------------|-----------------------|-------------------|
| High Channel | | |
| Result: Pass | Value: 1.65 mW | Limit: 1 W |



Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

| TEST EQUIPMENT | | | | | |
|---------------------------------|------------------|----------|-----|------------|----------|
| Description | Manufacturer | Model | ID | Last Cal. | Interval |
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| Attenuator 20 dB, SMA M/F 26GHz | S.M. Electronics | SA26B-20 | AUY | 7/21/2009 | 13 |
| 26 GHz DC Block, SMA | Pasternack | PE8210 | AME | 10/19/2009 | 13 |
| EV06 Direct Connect Cable | ESM Cable Corp. | TT | ECA | NCR | 0 |

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

The spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in each available band. The channels closest to the band edges were selected. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its lowest, middle, and maximum data rate available.

The spectrum was scanned across each band edge from at least 25 MHz below the band edge to 25 MHz above the band edge.

EMC

BAND EDGE COMPLIANCE

| | | | |
|----------------|-------------------------------|-------------------|-------------|
| EUT: | AMP-CAV | Work Order: | LITS0005 |
| Serial Number: | A1019 0021 | Date: | 05/25/10 |
| Customer: | Lightspeed Technologies, Inc. | Temperature: | 22°C |
| Attendees: | None | Humidity: | 43% |
| Project: | None | Barometric Pres.: | 29.75 in |
| Tested by: | Rod Peloquin | Power: | 120VAC/60Hz |
| | | Job Site: | EV06 |

| TEST SPECIFICATIONS | | Test Method |
|---------------------|--|------------------|
| FCC 15.247:2010 | | ANSI C63.10:2009 |

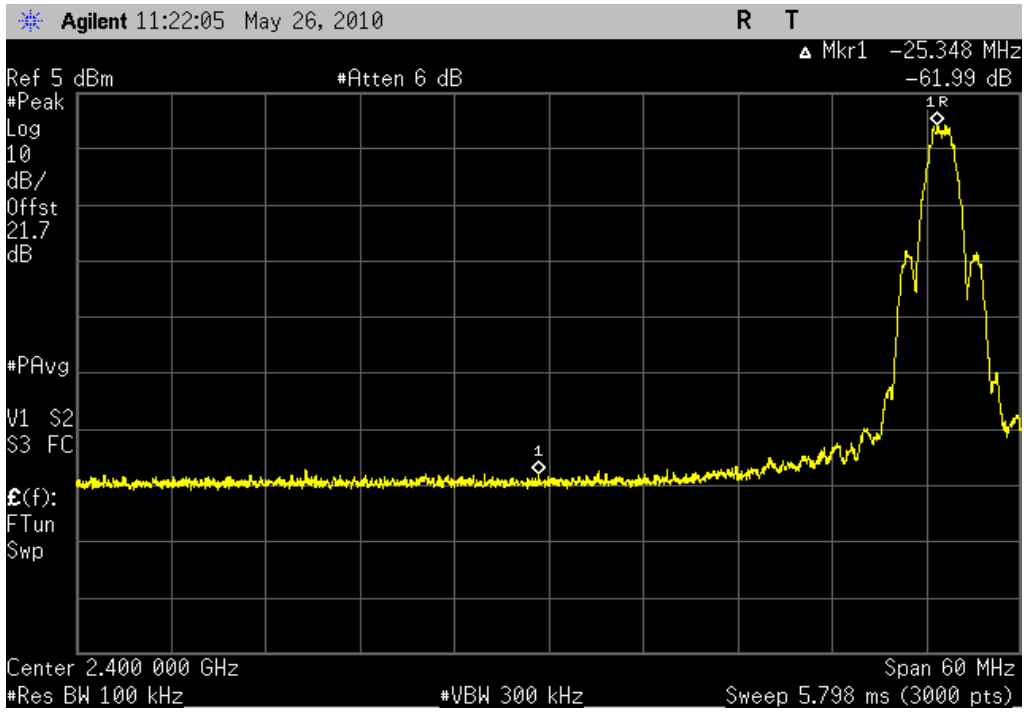
COMMENTS
None

DEVIATIONS FROM TEST STANDARD
No Deviations

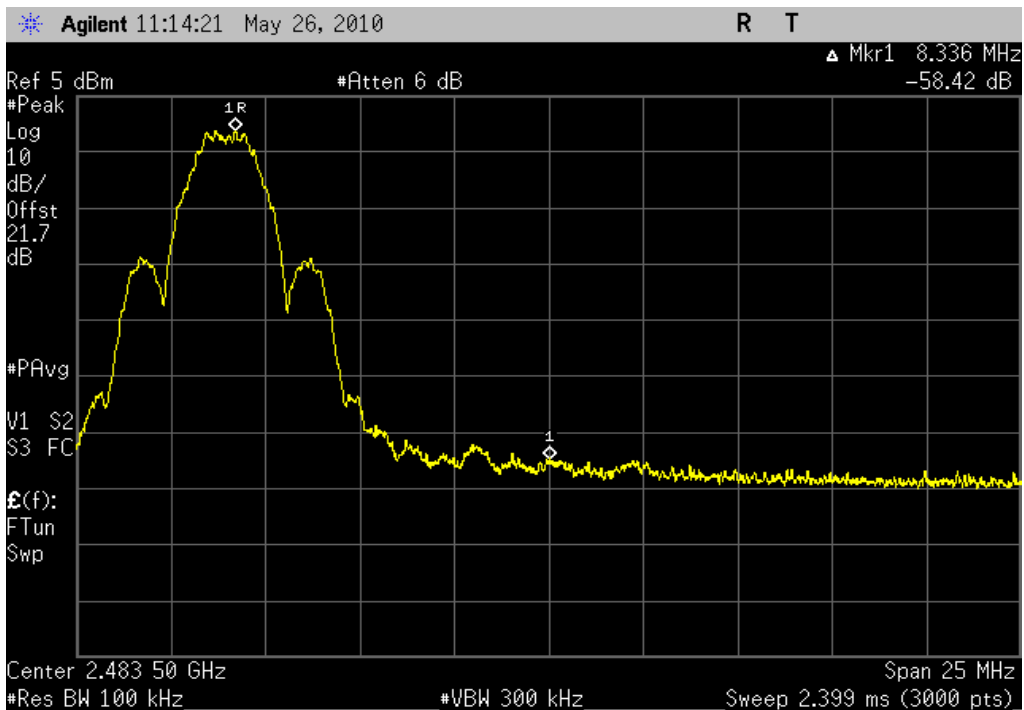
| | | |
|-----------------|---|---|
| Configuration # | 2 | Signature  |
|-----------------|---|---|

| | Value | Limit | Results |
|--------------|-----------|-----------|---------|
| Low Channel | -62.0 dBc | ≤ -20 dBc | Pass |
| High Channel | -58.4 dBc | ≤ -20 dBc | Pass |

| Low Channel | | |
|---------------------|-------------------------|-------------------------|
| Result: Pass | Value: -62.0 dBc | Limit: ≤ -20 dBc |



| High Channel | | |
|---------------------|-------------------------|-------------------------|
| Result: Pass | Value: -58.4 dBc | Limit: ≤ -20 dBc |



Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

| Description | Manufacturer | Model | ID | Last Cal. | Interval |
|---------------------------------|------------------|----------|-----|------------|----------|
| Spectrum Analyzer | Agilent | E4440A | AFD | 6/1/2009 | 24 |
| Attenuator 20 dB, SMA M/F 26GHz | S.M. Electronics | SA26B-20 | AUY | 7/21/2009 | 13 |
| 26 GHz DC Block, SMA | Pasternack | PE8210 | AME | 10/19/2009 | 13 |
| EV06 Direct Connect Cable | ESM Cable Corp. | TT | ECA | NCR | 0 |

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

The spurious RF conducted emissions were measured with the EUT set to low, medium, and high transmit frequencies. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its maximum data rate using direct sequence modulation. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.

SPURIOUS CONDUCTED EMISSIONS

EMC

| | | | |
|----------------|-------------------------------|-------------------|-------------|
| EUT: | AMP-CAV | Work Order: | LITS0005 |
| Serial Number: | A1019 0021 | Date: | 05/25/10 |
| Customer: | Lightspeed Technologies, Inc. | Temperature: | 22°C |
| Attendees: | None | Humidity: | 43% |
| Project: | None | Barometric Pres.: | 29.75 in |
| Tested by: | Rod Peloquin | Power: | 120VAC/60Hz |
| | | Job Site: | EV06 |

| | | |
|---------------------|--|------------------|
| TEST SPECIFICATIONS | | Test Method |
| FCC 15.247:2010 | | ANSI C63.10:2009 |

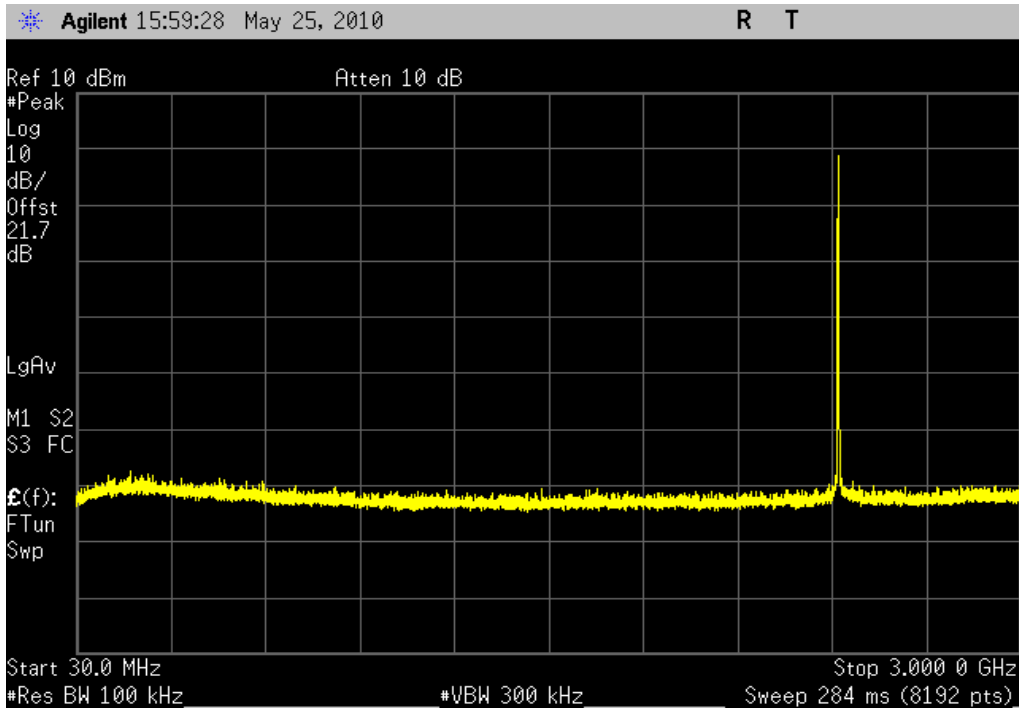
| |
|----------|
| COMMENTS |
| None |

| |
|-------------------------------|
| DEVIATIONS FROM TEST STANDARD |
| No Deviations |

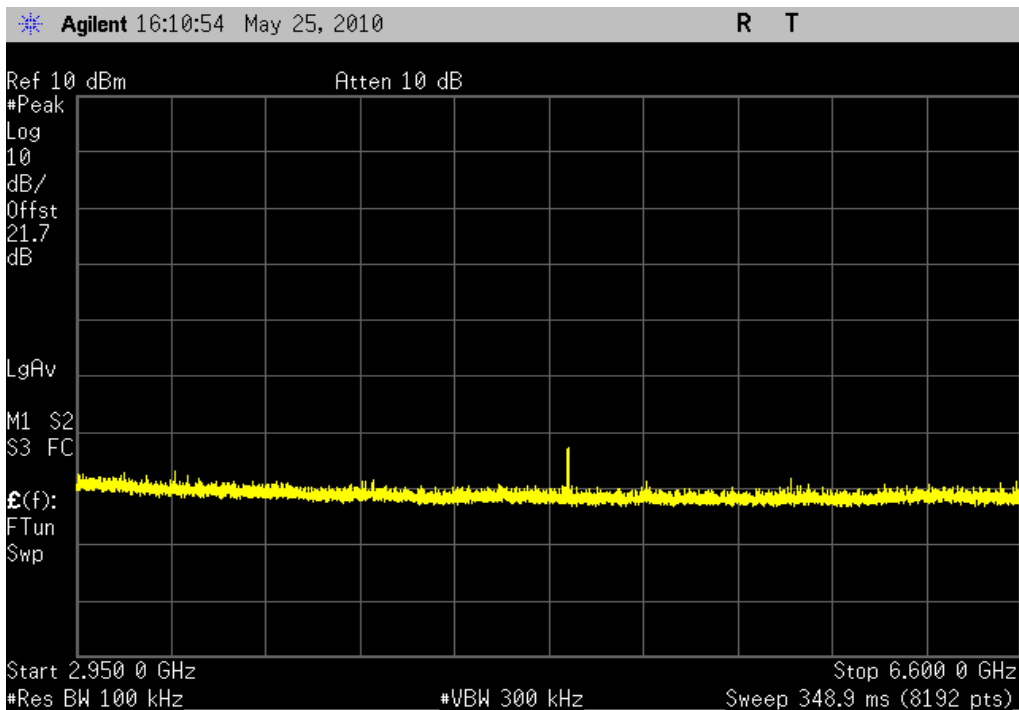
| | | |
|-----------------|---|---|
| Configuration # | 2 | Signature  |
|-----------------|---|---|

| | | Value | Limit | Results |
|---------------------|--------------------|-----------|-----------|---------|
| Low Channel | | | | |
| | 30M Hz - 3 GHz | < -40 dBc | ≤ -20 dBc | Pass |
| | 2.95 GHz - 6.6 GHz | < -40 dBc | ≤ -20 dBc | Pass |
| | 6.59 GHz - 13 GHz | < -40 dBc | ≤ -20 dBc | Pass |
| | 12.95 GHz - 25 GHz | < -40 dBc | ≤ -20 dBc | Pass |
| Mid Channel | | | | |
| | 30M Hz - 3 GHz | < -40 dBc | ≤ -20 dBc | Pass |
| | 2.95 GHz - 6.6 GHz | < -40 dBc | ≤ -20 dBc | Pass |
| | 6.59 GHz - 13 GHz | < -40 dBc | ≤ -20 dBc | Pass |
| | 12.95 GHz - 25 GHz | < -40 dBc | ≤ -20 dBc | Pass |
| High Channel | | | | |
| | 30M Hz - 3 GHz | < -40 dBc | ≤ -20 dBc | Pass |
| | 2.95 GHz - 6.6 GHz | < -40 dBc | ≤ -20 dBc | Pass |
| | 6.59 GHz - 13 GHz | < -40 dBc | ≤ -20 dBc | Pass |
| | 12.95 GHz - 25 GHz | < -40 dBc | ≤ -20 dBc | Pass |

Low Channel, 30M Hz - 3 GHz
Result: Pass **Value:** < -40 dBc **Limit:** ≤ -20 dBc



Low Channel, 2.95 GHz - 6.6 GHz
Result: Pass **Value:** < -40 dBc **Limit:** ≤ -20 dBc



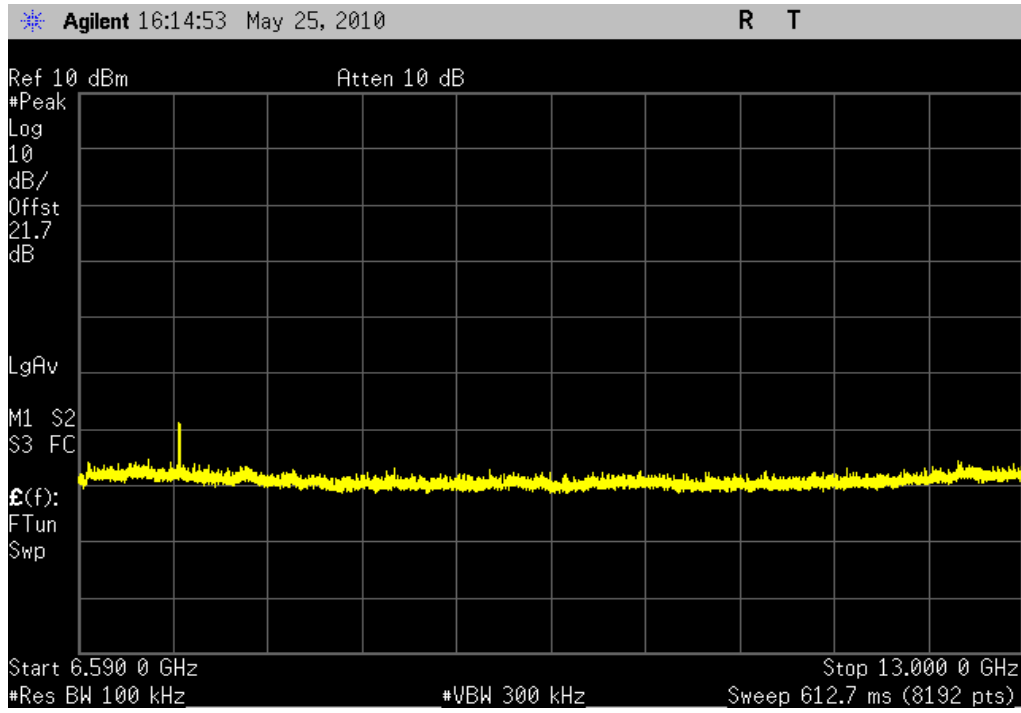
SPURIOUS CONDUCTED EMISSIONS

Low Channel, 6.59 GHz - 13 GHz

Result: Pass

Value: < -40 dBc

Limit: ≤ -20 dBc

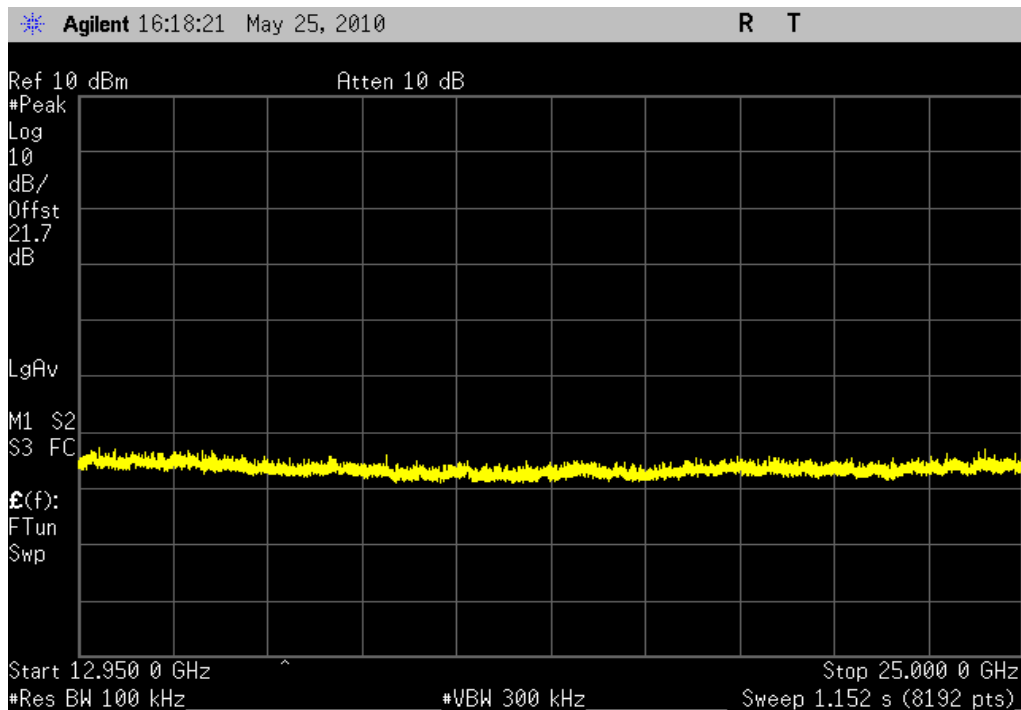


Low Channel, 12.95 GHz - 25 GHz

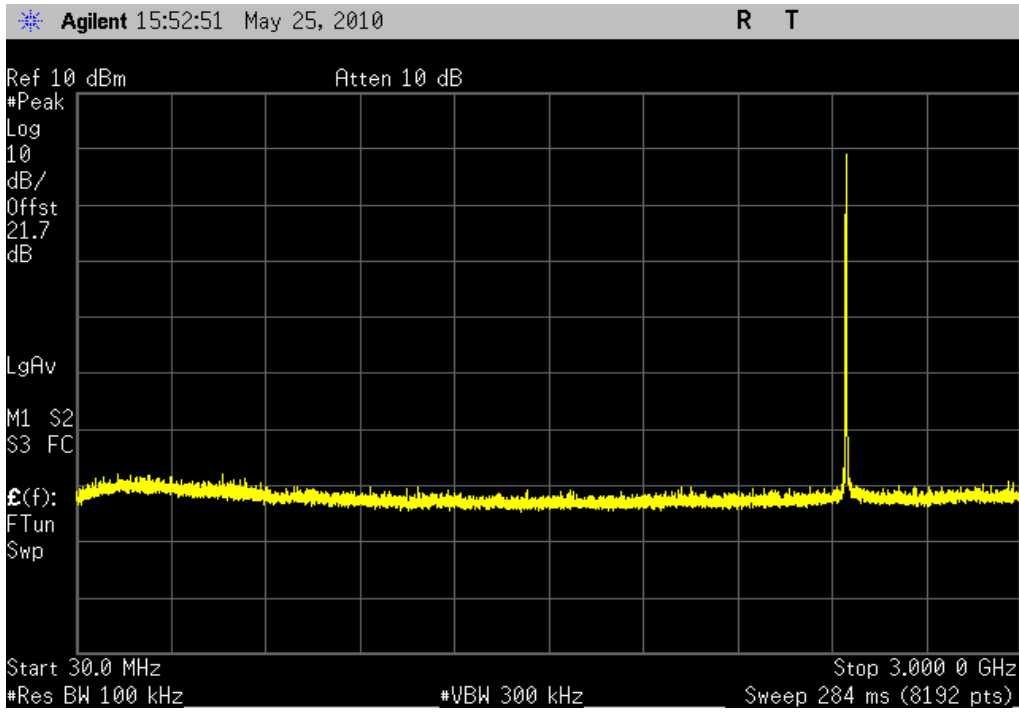
Result: Pass

Value: < -40 dBc

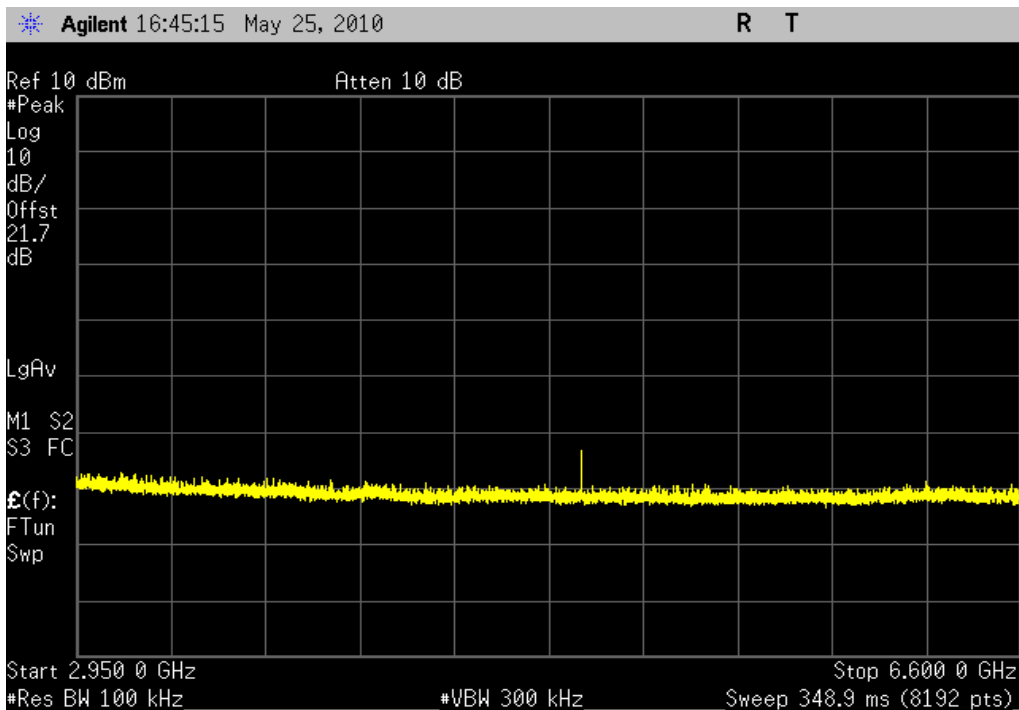
Limit: ≤ -20 dBc



Mid Channel, 30M Hz - 3 GHz
Result: Pass **Value:** < -40 dBc **Limit:** ≤ -20 dBc



Mid Channel, 2.95 GHz - 6.6 GHz
Result: Pass **Value:** < -40 dBc **Limit:** ≤ -20 dBc

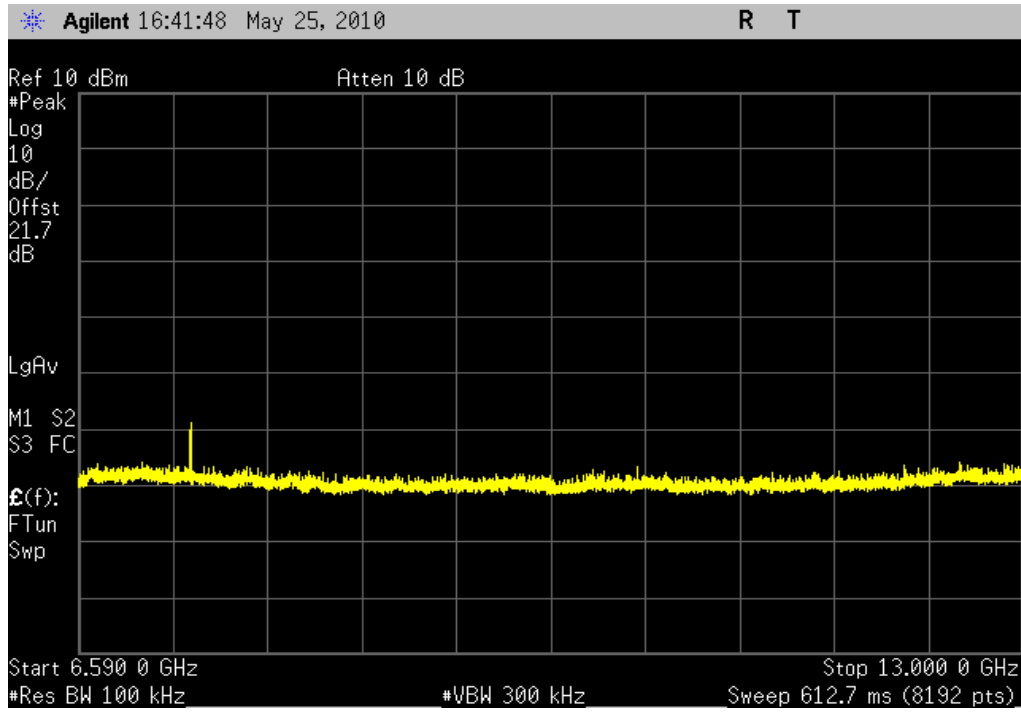


Mid Channel, 6.59 GHz - 13 GHz

Result: Pass

Value: < -40 dBc

Limit: ≤ -20 dBc

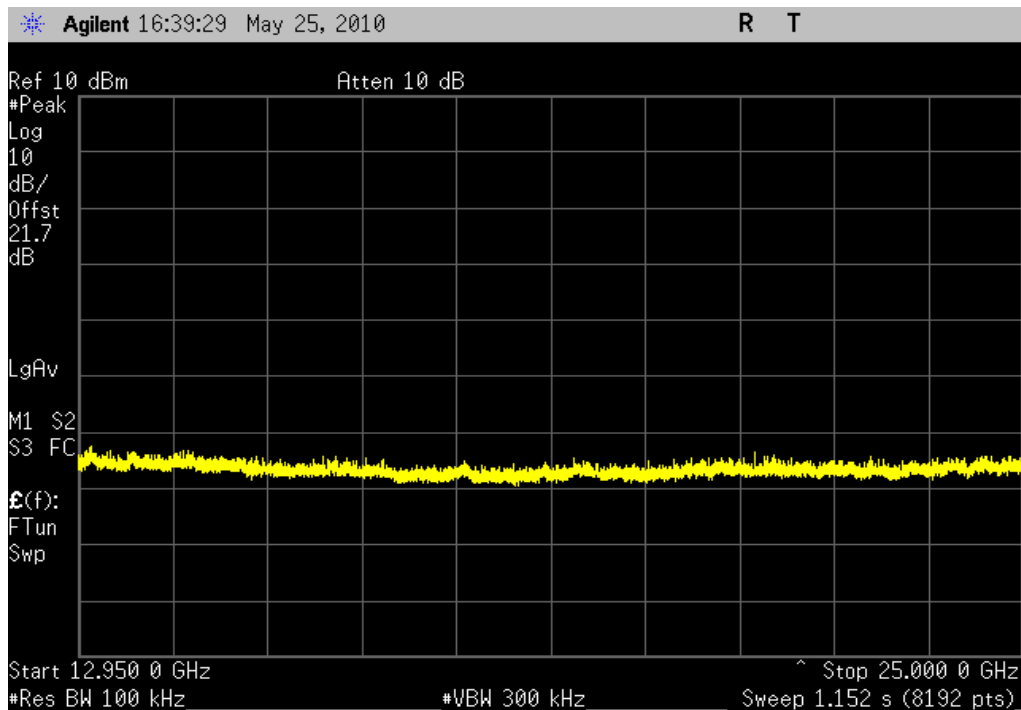


Mid Channel, 12.95 GHz - 25 GHz

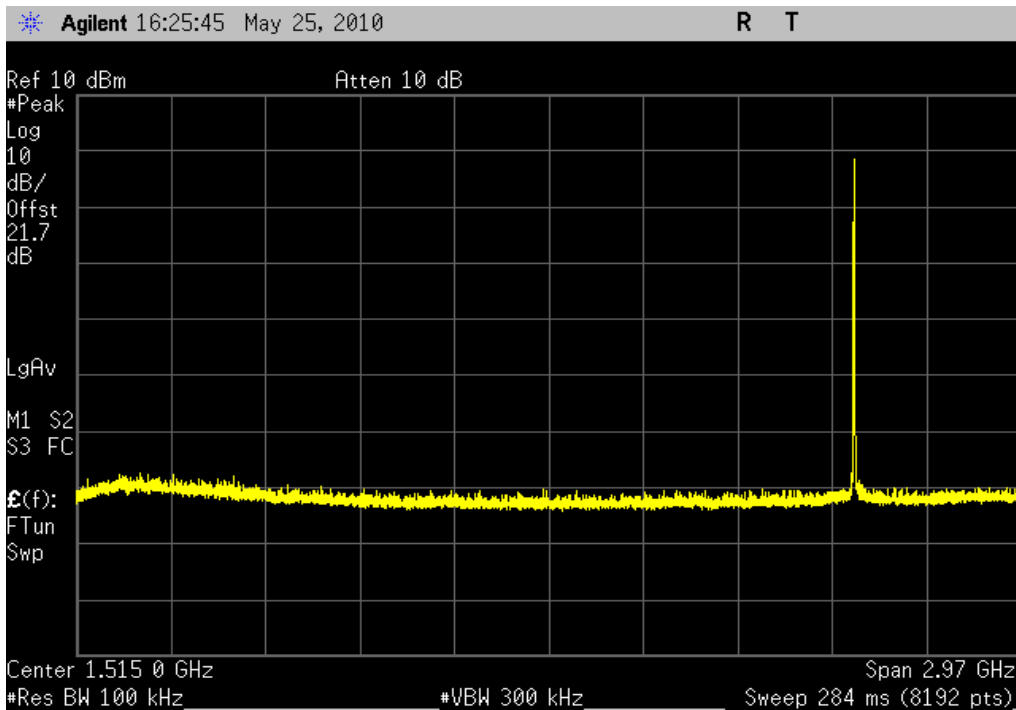
Result: Pass

Value: < -40 dBc

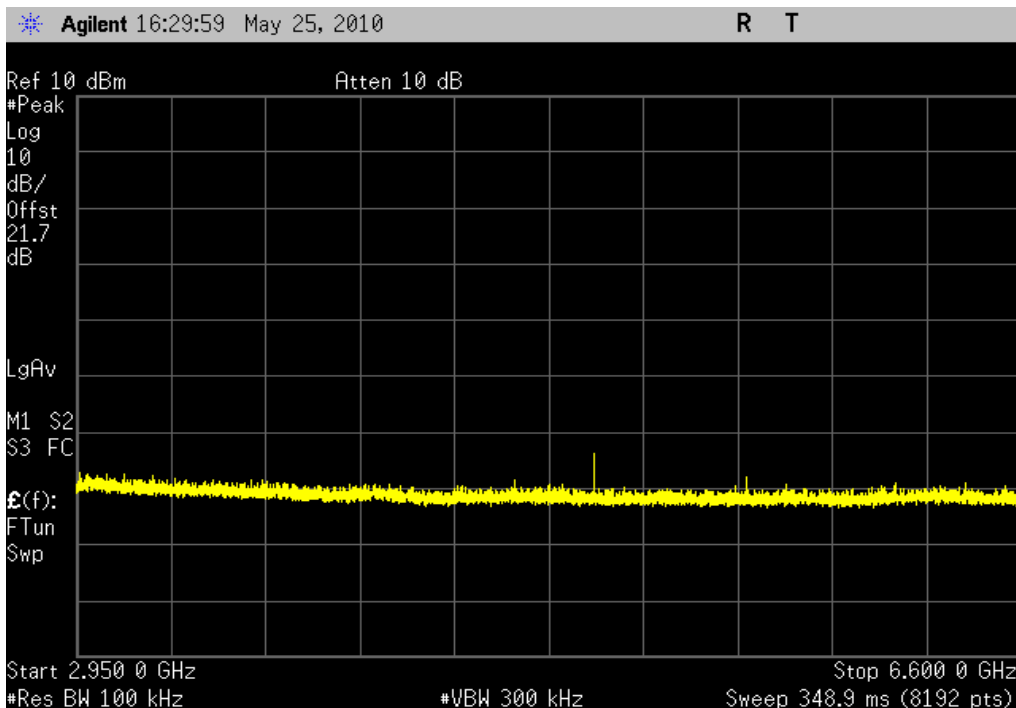
Limit: ≤ -20 dBc



High Channel, 30M Hz - 3 GHz
Result: Pass **Value:** < -40 dBc **Limit:** ≤ -20 dBc



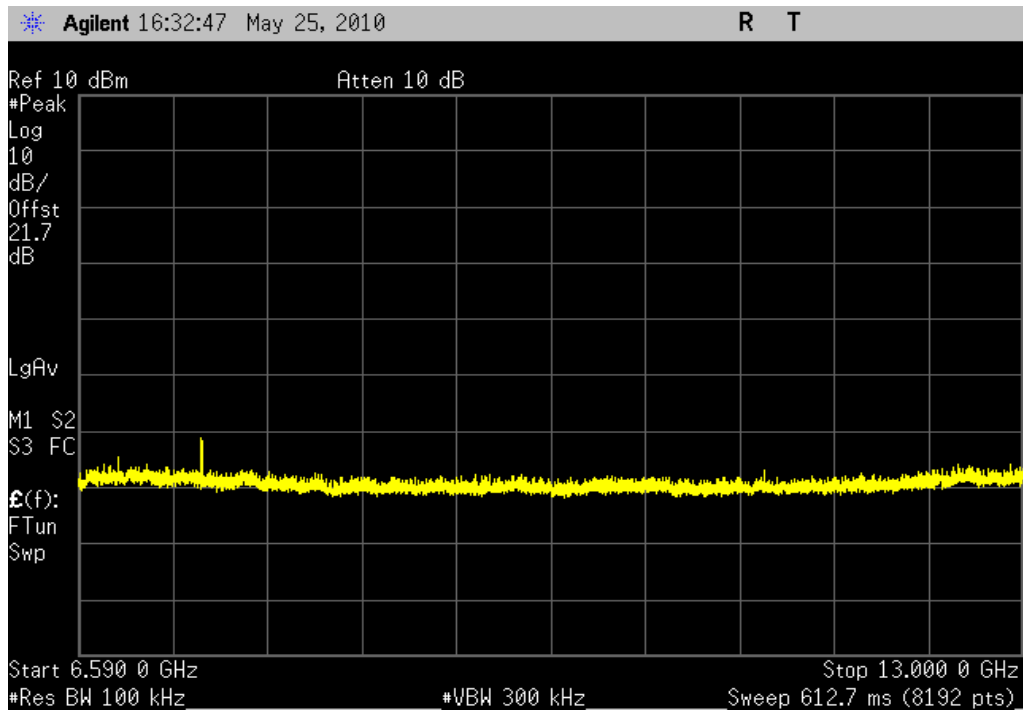
High Channel, 2.95 GHz - 6.6 GHz
Result: Pass **Value:** < -40 dBc **Limit:** ≤ -20 dBc



High Channel, 6.59 GHz - 13 GHz

Result: Pass

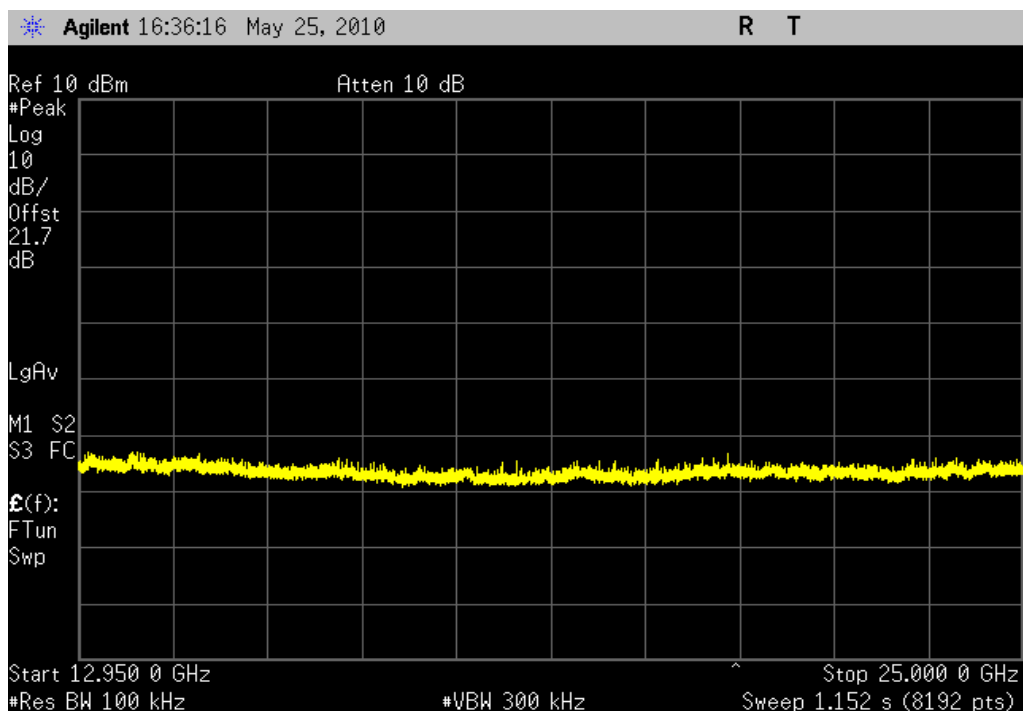
Value: < -40 dBc

Limit: \leq -20 dBc

High Channel, 12.95 GHz - 25 GHz

Result: Pass

Value: < -40 dBc

Limit: \leq -20 dBc

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

| TEST EQUIPMENT | | | | | |
|---------------------------------|------------------|---------------|-----|------------|----------|
| Description | Manufacturer | Model | ID | Last Cal. | Interval |
| Spectrum Analyzer | Agilent | E4440A | AFD | 6/1/2009 | 24 |
| EV06 Direct Connect Cable | ESM Cable Corp. | TT | ECA | NCR | 0 |
| 26 GHz DC Block, SMA | Pasternack | PE8210 | AME | 10/19/2009 | 13 |
| Attenuator 20 dB, SMA M/F 26GHz | S.M. Electronics | SA26B-20 | AUY | 7/21/2009 | 13 |
| Attenuator, 6 dB, 'SMA' | N/A | 93459 3330A-6 | AUF | 4/1/2010 | 13 |
| Power Meter | Gigatronics | 8651A | SPM | 1/7/2010 | 13 |
| Power Sensor | Gigatronics | 80701A | SPL | 1/7/2010 | 13 |
| Signal Generator | Agilent | E8257D | TGX | 12/10/2008 | 24 |

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

The power spectral density measurements were measured with the EUT set to low, mid, and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its maximum data rate for each modulation type available. While the average output power was measured as defined in section ANSI C63.10:2009, Section 6.11.2.3 was followed.

The the spectrum analyzer was set as follows:

The emission peak was located and zoomed in on within the passband.

a) RBW = 3 kHz

b) VBW = 10 kHz

c) Span = 300 kHz

d) Sweep time = 100s

e) Trace set to MAX

f) The 1 hz Marker Noise function on the analyzer was used. The data was corrected to 3 kHz by adding 34.8 dB to the reading.

EMC

POWER SPECTRAL DENSITY

| | |
|--|-----------------------------------|
| EUT: AMP-CAV | Work Order: LITS0005 |
| Serial Number: A1019 0021 | Date: 05/25/10 |
| Customer: Lightspeed Technologies, Inc. | Temperature: 22°C |
| Attendees: None | Humidity: 43% |
| Project: None | Barometric Pres.: 29.75 in |
| Tested by: Rod Peloquin | Power: 120VAC/60Hz |
| | Job Site: EV06 |

| | |
|----------------------------|--------------------|
| TEST SPECIFICATIONS | Test Method |
| FCC 15.247:2010 | ANSI C63.10:2009 |

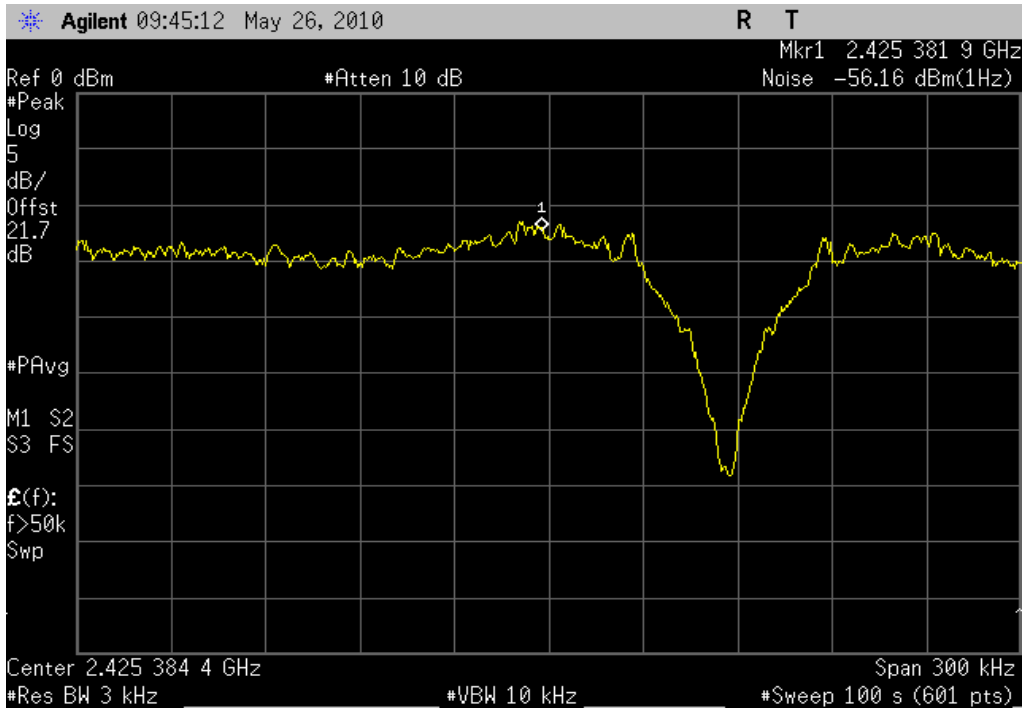
COMMENTS
None

DEVIATIONS FROM TEST STANDARD
No Deviations

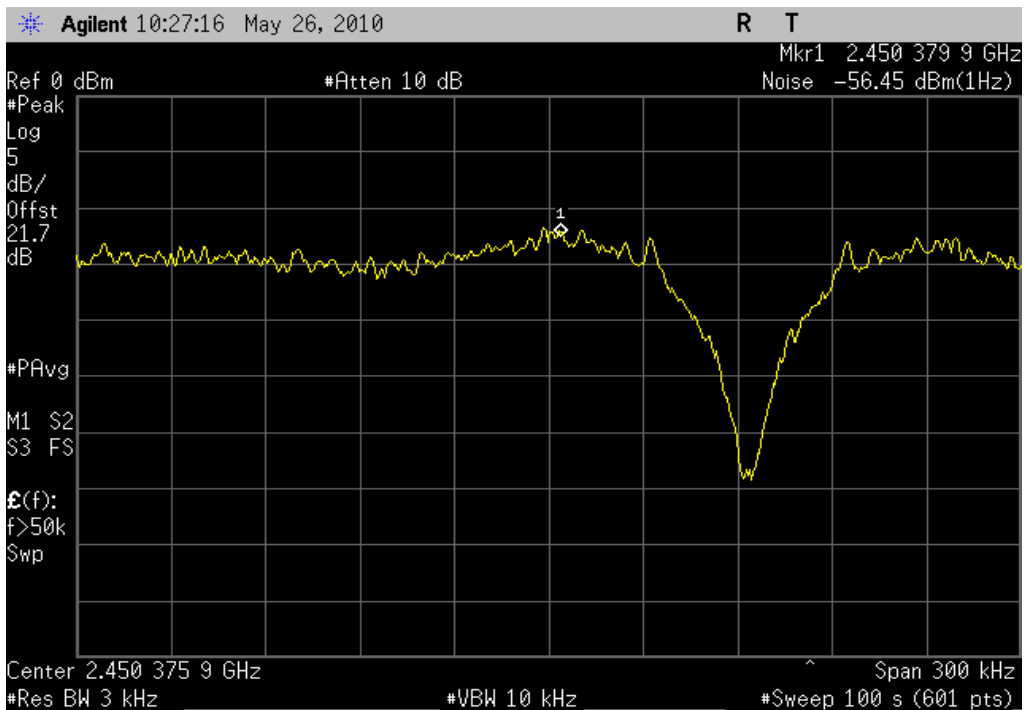
| | | |
|------------------------|---|----------------------------------|
| Configuration # | 2 | <i>Rod Peloquin</i> Signature |
|------------------------|---|----------------------------------|

| | Value | Limit | Results |
|--------------|-------------------|---------------|---------|
| Low Channel | -21.4 dBm / 3 kHz | 8 dBm / 3 kHz | Pass |
| Mid Channel | -21.7 dBm / 3 kHz | 8 dBm / 3 kHz | Pass |
| High Channel | -22.1 dBm / 3 kHz | 8 dBm / 3 kHz | Pass |

Low Channel
Result: Pass **Value:** -21.4 dBm / 3 kHz **Limit:** 8 dBm / 3 kHz



Mid Channel
Result: Pass **Value:** -21.7 dBm / 3 kHz **Limit:** 8 dBm / 3 kHz

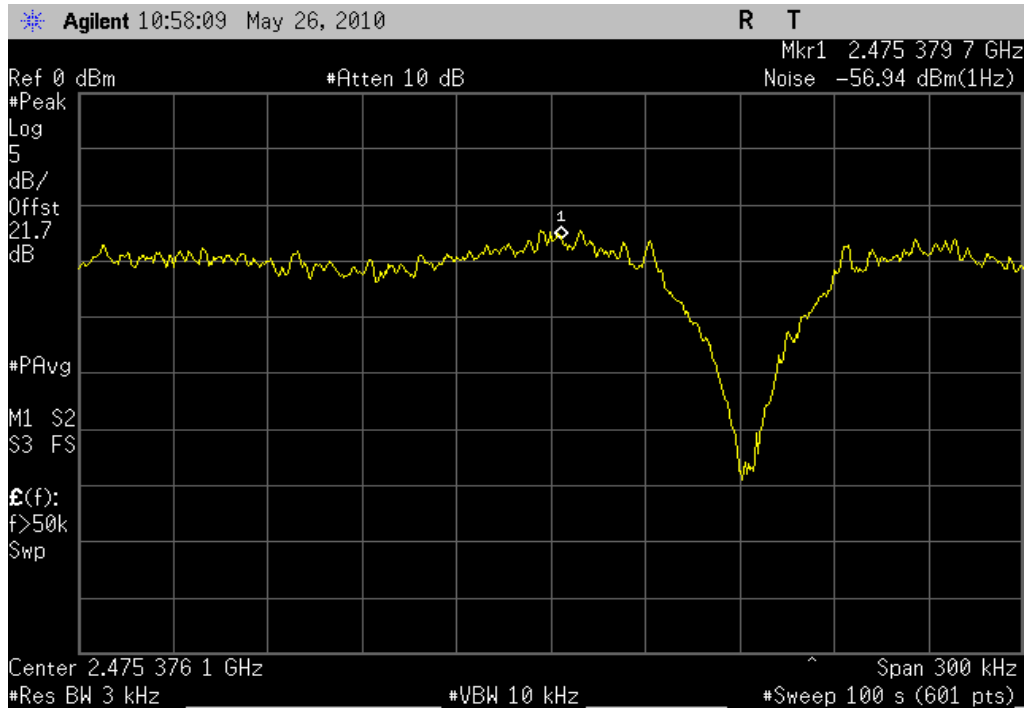


High Channel

Result: Pass

Value: -22.1 dBm / 3 kHz

Limit: 8 dBm / 3 kHz



Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION

Transmitting with normal modulation at 100% duty cycle

CHANNELS TESTED

Low channel, 2425 MHz

Mid channel, 2450 MHz

High channel, 2475 MHz

POWER SETTINGS INVESTIGATED

120VAC/60Hz

FREQUENCY RANGE INVESTIGATED

| | | | |
|-----------------|--------|----------------|--------|
| Start Frequency | 30 MHz | Stop Frequency | 25 GHz |
|-----------------|--------|----------------|--------|

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

| Description | Manufacturer | Model | ID | Last Cal. | Interval |
|----------------------------|-----------------|----------------------------|-----|-----------|----------|
| Spectrum Analyzer | Agilent | E4446A | AAQ | 1/6/2010 | 12 |
| Low Pass Filter 0-1000 MHz | Micro-Tronics | LPM50004 | LFD | 7/10/2009 | 13 |
| High Pass Filter | Micro-Tronics | HPM50111 | HFO | 7/10/2009 | 13 |
| Pre-Amplifier | Miteq | AM-1616-1000 | AOL | 7/10/2009 | 13 |
| Antenna, Biconilog | EMCO | 3141 | AXE | 1/14/2010 | 13 |
| EV01 Cables | N/A | Bilog Cables | EVA | 7/10/2009 | 13 |
| Pre-Amplifier | Miteq | AMF-4D-010100-24-10P | APW | 7/10/2009 | 13 |
| Antenna, Horn | EMCO | 3115 | AHC | 8/12/2008 | 24 |
| EV01 Cables | N/A | Double Ridge Horn Cables | EVB | 7/10/2009 | 13 |
| Pre-Amplifier | Miteq | AMF-6F-08001200-30-10P | AVC | 7/10/2009 | 13 |
| Antenna, Horn | ETS | 3160-07 | AHU | NCR | 0 |
| EV01 Cables | N/A | Standard Gain Horns Cables | EVF | 4/2/2010 | 13 |
| Pre-Amplifier | Miteq | AMF-6F-12001800-30-10P | AVD | 7/10/2009 | 13 |
| Antenna, Horn | ETS | 3160-08 | AHV | NCR | 0 |
| EV01 Cables | N/A | Standard Gain Horns Cables | EVF | 4/2/2010 | 13 |
| Pre-Amplifier | Miteq | AMF-6F-18002650-25-10P | AVU | 5/19/2009 | 13 |
| Antenna, Horn | ETS Lindgren | 3160-09 | AIV | NCR | 0 |
| Cable | ESM Cable Corp. | KMKM-72 | EVY | 11/3/2009 | 13 |

MEASUREMENT BANDWIDTHS

| | Frequency Range | Peak Data | Quasi-Peak Data | Average Data |
|--|-----------------|-----------|-----------------|--------------|
| | (MHz) | (kHz) | (kHz) | (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.

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. The measurement uncertainty estimation is available upon request.

TEST DESCRIPTION

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 the EUT antenna in three orthogonal axis, and adjusting measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.10:2009). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

| | |
|---|-----------------------------|
| EUT: AMP-CAV | Work Order: LITS0005 |
| Serial Number: See configurations | Date: 05/28/10 |
| Customer: Lightspeed Technologies, Inc. | Temperature: 23 |
| Attendees: None | Humidity: 42% |
| Project: None | Barometric Pres.: 1029.5 in |
| Tested by: Rod Peloquin | Power: 120VAC/60Hz |
| | Job Site: EV01 |

| | |
|----------------------------|------------------|
| TEST SPECIFICATIONS | Test Method |
| FCC 15.247:2010 | ANSI C63.10:2009 |

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

COMMENTS
None

EUT OPERATING MODES

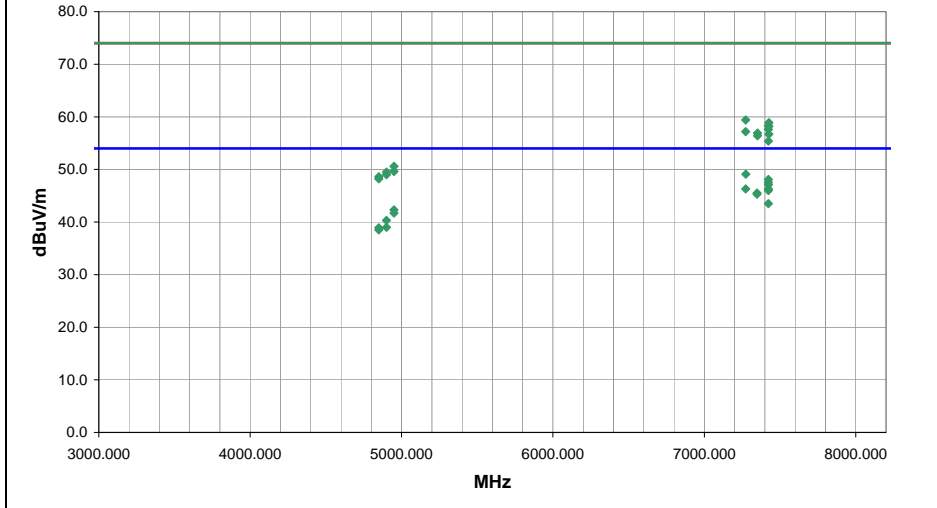
Transmitting

DEVIATIONS FROM TEST STANDARD

No deviations.

| | |
|-----------------|------|
| Run # | 3 |
| Configuration # | 6 |
| Results | Pass |

Rod Peloquin
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 |
|------------|------------------|-------------|-------------------|-----------------|-------------------|---------------------------|----------|----------|--------------------------|-----------------|--------------------|------------------------|--|
| 7273.680 | 33.1 | 16.0 | 111.0 | 1.5 | 3.0 | 0.0 | V-Horn | AV | 0.0 | 49.1 | 54.0 | -4.9 | Low channel, EUT on end, antenna vertical |
| 7423.560 | 31.2 | 16.9 | 297.0 | 2.4 | 3.0 | 0.0 | V-Horn | AV | 0.0 | 48.1 | 54.0 | -5.9 | High Channel, EUT on end, antenna vertical |
| 7423.490 | 30.6 | 16.9 | 87.0 | 1.9 | 3.0 | 0.0 | V-Horn | AV | 0.0 | 47.5 | 54.0 | -6.5 | High Channel, EUT on side, antenna vertical |
| 7423.440 | 30.2 | 16.9 | 231.0 | 1.2 | 3.0 | 0.0 | H-Horn | AV | 0.0 | 47.1 | 54.0 | -6.9 | High Channel, EUT horizontal, antenna horizontal |
| 7273.490 | 30.3 | 16.0 | 224.0 | 1.1 | 3.0 | 0.0 | H-Horn | AV | 0.0 | 46.3 | 54.0 | -7.7 | Low channel, EUT horizontal, antenna horizontal |
| 7423.610 | 29.4 | 16.9 | 207.0 | 1.6 | 3.0 | 0.0 | V-Horn | AV | 0.0 | 46.3 | 54.0 | -7.7 | High Channel, EUT horizontal, antenna horizontal |
| 7423.510 | 29.1 | 16.9 | 229.0 | 1.2 | 3.0 | 0.0 | H-Horn | AV | 0.0 | 46.0 | 54.0 | -8.0 | High Channel, EUT on end, antenna vertical |
| 7348.490 | 29.1 | 16.4 | 224.0 | 1.9 | 3.0 | 0.0 | V-Horn | AV | 0.0 | 45.5 | 54.0 | -8.5 | Mid channel, EUT on end, antenna vertical |
| 7348.500 | 28.9 | 16.4 | 223.0 | 1.0 | 3.0 | 0.0 | H-Horn | AV | 0.0 | 45.3 | 54.0 | -8.7 | Mid Channel, EUT horizontal, antenna horizontal |
| 7423.410 | 26.6 | 16.9 | 332.0 | 1.2 | 3.0 | 0.0 | H-Horn | AV | 0.0 | 43.5 | 54.0 | -10.5 | High Channel, EUT on side, antenna vertical |
| 4949.915 | 32.3 | 10.0 | 360.0 | 1.1 | 3.0 | 0.0 | V-Horn | AV | 0.0 | 42.3 | 54.0 | -11.7 | High Channel, EUT on end, antenna vertical |
| 4949.885 | 31.7 | 10.0 | 66.0 | 1.0 | 3.0 | 0.0 | H-Horn | AV | 0.0 | 41.7 | 54.0 | -12.3 | High Channel, EUT horizontal, antenna horizontal |
| 4899.900 | 30.5 | 9.8 | 69.0 | 1.5 | 3.0 | 0.0 | H-Horn | AV | 0.0 | 40.3 | 54.0 | -13.7 | Mid Channel, EUT horizontal, antenna horizontal |
| 7273.490 | 43.4 | 16.0 | 111.0 | 1.5 | 3.0 | 0.0 | V-Horn | PK | 0.0 | 59.4 | 74.0 | -14.6 | Low channel, EUT on end, antenna vertical |
| 4899.880 | 29.2 | 9.8 | 4.0 | 1.2 | 3.0 | 0.0 | V-Horn | AV | 0.0 | 39.0 | 54.0 | -15.0 | Mid channel, EUT on end, antenna vertical |
| 4849.900 | 29.3 | 9.6 | 2.0 | 1.1 | 3.0 | 0.0 | V-Horn | AV | 0.0 | 38.9 | 54.0 | -15.1 | Low channel, EUT on end, antenna vertical |
| 7426.380 | 42.0 | 16.9 | 297.0 | 2.4 | 3.0 | 0.0 | V-Horn | PK | 0.0 | 58.9 | 74.0 | -15.1 | High Channel, EUT on end, antenna vertical |
| 4849.860 | 28.9 | 9.6 | 56.0 | 1.0 | 3.0 | 0.0 | H-Horn | AV | 0.0 | 38.5 | 54.0 | -15.5 | Low channel, EUT horizontal, antenna horizontal |
| 7423.560 | 41.4 | 16.9 | 87.0 | 1.9 | 3.0 | 0.0 | V-Horn | PK | 0.0 | 58.3 | 74.0 | -15.7 | High Channel, EUT on side, antenna vertical |
| 7426.250 | 41.3 | 16.9 | 231.0 | 1.2 | 3.0 | 0.0 | H-Horn | PK | 0.0 | 58.2 | 74.0 | -15.8 | High Channel, EUT horizontal, antenna horizontal |
| 7423.340 | 40.7 | 16.9 | 207.0 | 1.6 | 3.0 | 0.0 | V-Horn | PK | 0.0 | 57.6 | 74.0 | -16.4 | High Channel, EUT horizontal, antenna horizontal |
| 7273.410 | 41.2 | 16.0 | 224.0 | 1.1 | 3.0 | 0.0 | H-Horn | PK | 0.0 | 57.2 | 74.0 | -16.8 | Low channel, EUT horizontal, antenna horizontal |
| 7351.300 | 40.6 | 16.3 | 224.0 | 1.9 | 3.0 | 0.0 | V-Horn | PK | 0.0 | 56.9 | 74.0 | -17.1 | Mid channel, EUT on end, antenna vertical |
| 7426.280 | 39.8 | 16.9 | 229.0 | 1.2 | 3.0 | 0.0 | H-Horn | PK | 0.0 | 56.7 | 74.0 | -17.3 | High Channel, EUT on end, antenna vertical |
| 7351.190 | 40.1 | 16.3 | 223.0 | 1.0 | 3.0 | 0.0 | H-Horn | PK | 0.0 | 56.4 | 74.0 | -17.6 | Mid Channel, EUT horizontal, antenna horizontal |
| 7423.180 | 38.5 | 16.9 | 332.0 | 1.2 | 3.0 | 0.0 | H-Horn | PK | 0.0 | 55.4 | 74.0 | -18.6 | High Channel, EUT on side, antenna vertical |
| 4949.730 | 40.6 | 10.0 | 360.0 | 1.1 | 3.0 | 0.0 | V-Horn | PK | 0.0 | 50.6 | 74.0 | -23.4 | High Channel, EUT on end, antenna vertical |
| 4949.805 | 39.6 | 10.0 | 66.0 | 1.0 | 3.0 | 0.0 | H-Horn | PK | 0.0 | 49.6 | 74.0 | -24.4 | High Channel, EUT horizontal, antenna horizontal |
| 4900.115 | 39.7 | 9.8 | 69.0 | 1.5 | 3.0 | 0.0 | H-Horn | PK | 0.0 | 49.5 | 74.0 | -24.5 | Mid Channel, EUT horizontal, antenna horizontal |
| 4899.805 | 39.2 | 9.8 | 4.0 | 1.2 | 3.0 | 0.0 | V-Horn | PK | 0.0 | 49.0 | 74.0 | -25.0 | Mid channel, EUT on end, antenna vertical |
| 4849.300 | 39.0 | 9.6 | 2.0 | 1.1 | 3.0 | 0.0 | V-Horn | PK | 0.0 | 48.6 | 74.0 | -25.4 | Low channel, EUT on end, antenna vertical |
| 4849.620 | 38.6 | 9.6 | 56.0 | 1.0 | 3.0 | 0.0 | H-Horn | PK | 0.0 | 48.2 | 74.0 | -25.8 | Low channel, EUT horizontal, antenna horizontal |

| | |
|---|-----------------------------|
| EUT: AMP-CAV | Work Order: LITS0005 |
| Serial Number: See configurations | Date: 05/28/10 |
| Customer: Lightspeed Technologies, Inc. | Temperature: 23 |
| Attendees: None | Humidity: 42% |
| Project: None | Barometric Pres.: 1029.5 in |
| Tested by: Rod Peloquin | Power: 120VAC/60Hz |
| | Job Site: EV01 |

| TEST SPECIFICATIONS | |
|---------------------|------------------|
| FCC 15.247:2010 | ANSI C63.10:2009 |

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

COMMENTS
None

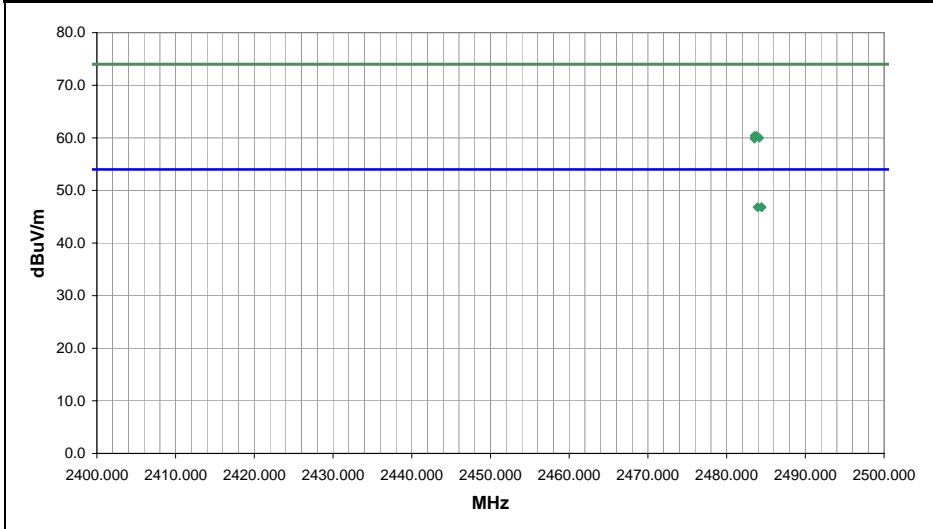
EUT OPERATING MODES

Transmitting

DEVIATIONS FROM TEST STANDARD

No deviations.

| | | |
|-----------------|------|---|
| Run # | 4 |  Signature |
| Configuration # | 6 | |
| Results | Pass | |



| 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 |
|------------|------------------|-------------|-------------------|-----------------|-------------------|---------------------------|----------|----------|--------------------------|-----------------|--------------------|------------------------|---|
| 2483.898 | 24.1 | 2.7 | 208.0 | 1.0 | 3.0 | 20.0 | V-Horn | AV | 0.0 | 46.8 | 54.0 | -7.2 | High Channel, EUT vertical, antenna vertical |
| 2484.003 | 24.1 | 2.7 | 280.0 | 1.0 | 3.0 | 20.0 | V-Horn | AV | 0.0 | 46.8 | 54.0 | -7.2 | High Channel, EUT on side, antenna vertical |
| 2484.428 | 24.1 | 2.7 | 191.0 | 1.0 | 3.0 | 20.0 | V-Horn | AV | 0.0 | 46.8 | 54.0 | -7.2 | High Channel, EUT horizontal antenna horizontal |
| 2484.452 | 24.1 | 2.7 | 265.0 | 1.0 | 3.0 | 20.0 | H-Horn | AV | 0.0 | 46.8 | 54.0 | -7.2 | High Channel, EUT vertical, antenna vertical |
| 2484.458 | 24.1 | 2.7 | 164.0 | 1.0 | 3.0 | 20.0 | H-Horn | AV | 0.0 | 46.8 | 54.0 | -7.2 | High Channel, EUT horizontal antenna horizontal |
| 2483.533 | 37.7 | 2.7 | 265.0 | 1.0 | 3.0 | 20.0 | H-Horn | PK | 0.0 | 60.4 | 74.0 | -13.6 | High Channel, EUT vertical, antenna vertical |
| 2483.807 | 37.7 | 2.7 | 280.0 | 1.0 | 3.0 | 20.0 | V-Horn | PK | 0.0 | 60.4 | 74.0 | -13.6 | High Channel, EUT on side, antenna vertical |
| 2483.540 | 37.4 | 2.7 | 191.0 | 1.0 | 3.0 | 20.0 | V-Horn | PK | 0.0 | 60.1 | 74.0 | -13.9 | High Channel, EUT horizontal antenna horizontal |
| 2484.165 | 37.3 | 2.7 | 164.0 | 1.0 | 3.0 | 20.0 | H-Horn | PK | 0.0 | 60.0 | 74.0 | -14.0 | High Channel, EUT horizontal antenna horizontal |
| 2483.543 | 37.1 | 2.7 | 208.0 | 1.0 | 3.0 | 20.0 | V-Horn | PK | 0.0 | 59.8 | 74.0 | -14.2 | High Channel, EUT vertical, antenna vertical |

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION

Transmitting low channel
 Transmitting high channel
 Transmitting mid channel

POWER SETTINGS INVESTIGATED

120VAC/60Hz

CONFIGURATIONS INVESTIGATED

LITS0005 - 5

SAMPLE CALCULATIONS

Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator

TEST EQUIPMENT

| Description | Manufacturer | Model | ID | Last Cal. | Interval |
|------------------|-----------------|------------------|-----|-----------|----------|
| Receiver | Rohde & Schwarz | ESCI | ARE | 4/29/2010 | 12 mo |
| Attenuator | Coaxicom | 66702 2910-20 | ATO | 7/21/2009 | 13 mo |
| High Pass Filter | TTE | H97-100K-50-720B | HFX | 2/16/2010 | 13 mo |
| LISN | Solar | 9252-50-R-24-BNC | LIR | 3/2/2010 | 12 mo |
| EV07 Cables | N/A | Conducted Cables | EVG | 6/1/2009 | 13 mo |
| LISN | Solar | 9252-50-R-24-BNC | LIP | 3/2/2010 | 12 mo |

MEASUREMENT BANDWIDTHS

| | Frequency Range | Peak Data | Quasi-Peak Data | Average Data |
|--|-----------------|-----------|-----------------|--------------|
| | (MHz) | (kHz) | (kHz) | (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.

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network. Equipment is tested with power cords that are normally used or that have electrical or shielding characteristics that are the same as those cords normally used. Typically those measurements are made using a LISN (Line Impedance Stabilization Network), the 50ohm measuring port is terminated by a 50ohm EMI meter or a 50ohm resistive load. All 50ohm measuring ports of the LISN are terminated by 50ohm.

EMC

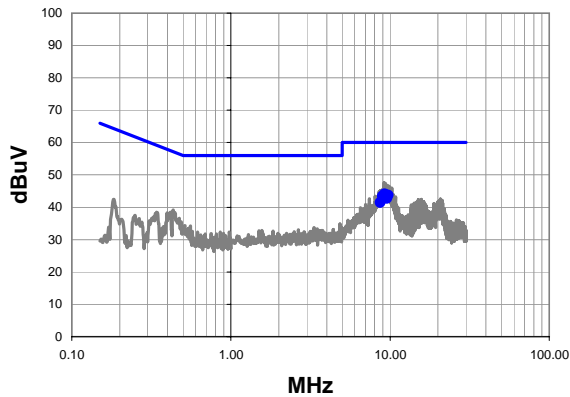
AC POWERLINE CONDUCTED EMISSIONS

| | | | | |
|------------------------|-------------------------------|--------------------------|-----------|--|
| Work Order: | LITS0005 | Date: | 05/27/10 | <i>Rod Le Pelouin</i> Tested by: Rod Pelouin |
| Project: | None | Temperature: | 23 | |
| Job Site: | EV07 | Humidity: | 42 | |
| Serial Number: | See configurations | Barometric Pres.: | 1029.5 in | |
| EUT: | AMP-CAV | | | |
| Configuration: | 5 - AC Conducted Emissions | | | |
| Customer: | Lightspeed Technologies, Inc. | | | |
| Attendees: | None | | | |
| EUT Power: | 120VAC/60Hz | | | |
| Operating Mode: | Transmitting mid channel | | | |
| Deviations: | None | | | |
| Comments: | None | | | |

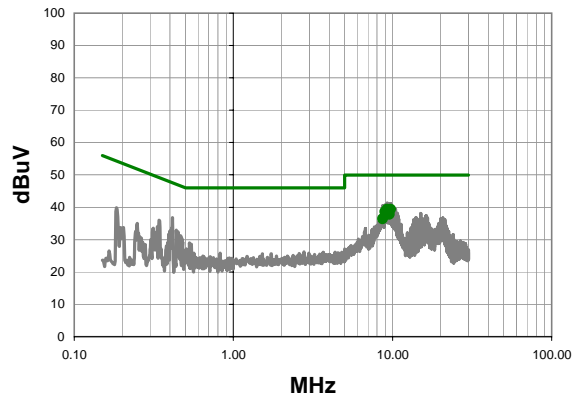
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|---|--|
| Test Specifications FCC 15.207:2010 | Test Method ANSI C63.10:2009 |
|---|--|

| | | | | | | | |
|--------------|---|--------------|-----------|--------------------------|----|----------------|------|
| Run # | 3 | Line: | High Line | Ext. Attenuation: | 20 | Results | Pass |
|--------------|---|--------------|-----------|--------------------------|----|----------------|------|

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Compared to Spec. (dB) |
|------------|------------------|-------------|-----------------|--------------------|------------------------|
| 9.262 | 23.6 | 20.5 | 44.1 | 60.0 | -15.9 |
| 9.750 | 23.2 | 20.5 | 43.7 | 60.0 | -16.3 |
| 8.966 | 22.9 | 20.5 | 43.4 | 60.0 | -16.6 |
| 9.162 | 22.8 | 20.5 | 43.3 | 60.0 | -16.7 |
| 9.554 | 22.2 | 20.5 | 42.7 | 60.0 | -17.3 |
| 8.676 | 20.9 | 20.5 | 41.4 | 60.0 | -18.6 |

Average Data - vs - Average Limit

| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Compared to Spec. (dB) |
|------------|------------------|-------------|-----------------|--------------------|------------------------|
| 9.750 | 18.8 | 20.5 | 39.3 | 50.0 | -10.7 |
| 9.262 | 18.8 | 20.5 | 39.3 | 50.0 | -10.7 |
| 9.162 | 18.1 | 20.5 | 38.6 | 50.0 | -11.4 |
| 8.966 | 18.1 | 20.5 | 38.6 | 50.0 | -11.4 |
| 9.554 | 17.3 | 20.5 | 37.8 | 50.0 | -12.2 |
| 8.676 | 15.9 | 20.5 | 36.4 | 50.0 | -13.6 |

EMC

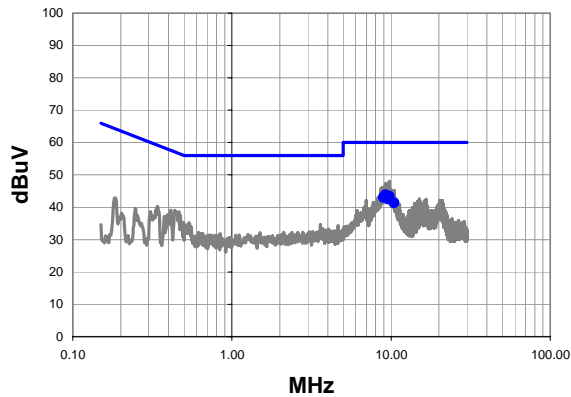
AC POWERLINE CONDUCTED EMISSIONS

| | | | | |
|------------------------|-------------------------------|--------------------------|-----------|--|
| Work Order: | LITS0005 | Date: | 05/27/10 | <i>Rod Le Pelouin</i> Tested by: Rod Pelouin |
| Project: | None | Temperature: | 23 | |
| Job Site: | EV07 | Humidity: | 42 | |
| Serial Number: | See configurations | Barometric Pres.: | 1029.5 in | |
| EUT: | AMP-CAV | | | |
| Configuration: | 5 - AC Conducted Emissions | | | |
| Customer: | Lightspeed Technologies, Inc. | | | |
| Attendees: | None | | | |
| EUT Power: | 120VAC/60Hz | | | |
| Operating Mode: | Transmitting mid channel | | | |
| Deviations: | None | | | |
| Comments: | None | | | |

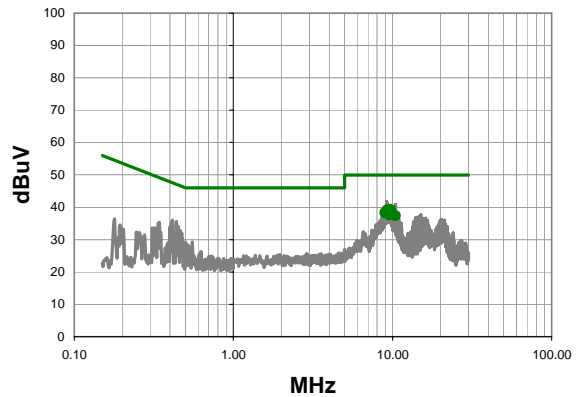
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| Test Specifications FCC 15.207:2010 | Test Method ANSI C63.10:2009 |
|---|--|

| | | | | | | | |
|--------------|---|--------------|---------|--------------------------|----|----------------|------|
| Run # | 4 | Line: | Neutral | Ext. Attenuation: | 20 | Results | Pass |
|--------------|---|--------------|---------|--------------------------|----|----------------|------|

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Compared to Spec. (dB) |
|------------|------------------|-------------|-----------------|--------------------|------------------------|
| 9.260 | 23.3 | 20.5 | 43.8 | 60.0 | -16.2 |
| 9.748 | 22.9 | 20.5 | 43.4 | 60.0 | -16.6 |
| 9.162 | 22.8 | 20.5 | 43.3 | 60.0 | -16.7 |
| 8.966 | 22.5 | 20.5 | 43.0 | 60.0 | -17.0 |
| 9.552 | 22.0 | 20.5 | 42.5 | 60.0 | -17.5 |
| 10.434 | 20.8 | 20.5 | 41.3 | 60.0 | -18.7 |

Average Data - vs - Average Limit

| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Compared to Spec. (dB) |
|------------|------------------|-------------|-----------------|--------------------|------------------------|
| 9.748 | 18.7 | 20.5 | 39.2 | 50.0 | -10.8 |
| 9.260 | 18.6 | 20.5 | 39.1 | 50.0 | -10.9 |
| 9.162 | 18.1 | 20.5 | 38.6 | 50.0 | -11.4 |
| 8.966 | 17.8 | 20.5 | 38.3 | 50.0 | -11.7 |
| 9.552 | 17.1 | 20.5 | 37.6 | 50.0 | -12.4 |
| 10.434 | 16.8 | 20.5 | 37.3 | 50.0 | -12.7 |

EMC

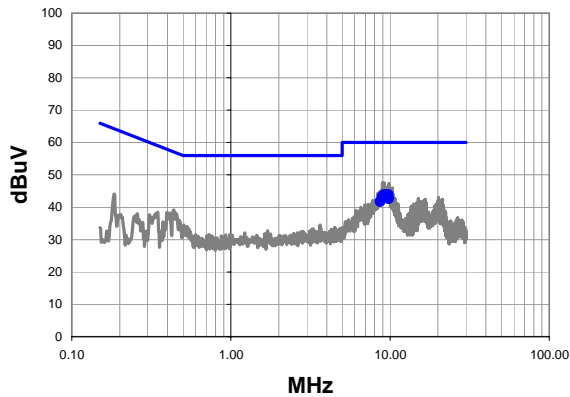
AC POWERLINE CONDUCTED EMISSIONS

| | | | | |
|------------------------|-------------------------------|--------------------------|-----------|--|
| Work Order: | LITS0005 | Date: | 05/27/10 | <i>Rod Le Pelouin</i> Tested by: Rod Pelouin |
| Project: | None | Temperature: | 23 | |
| Job Site: | EV07 | Humidity: | 42 | |
| Serial Number: | See configurations | Barometric Pres.: | 1029.5 in | |
| EUT: | AMP-CAV | | | |
| Configuration: | 5 - AC Conducted Emissions | | | |
| Customer: | Lightspeed Technologies, Inc. | | | |
| Attendees: | None | | | |
| EUT Power: | 120VAC/60Hz | | | |
| Operating Mode: | Transmitting high channel | | | |
| Deviations: | None | | | |
| Comments: | None | | | |

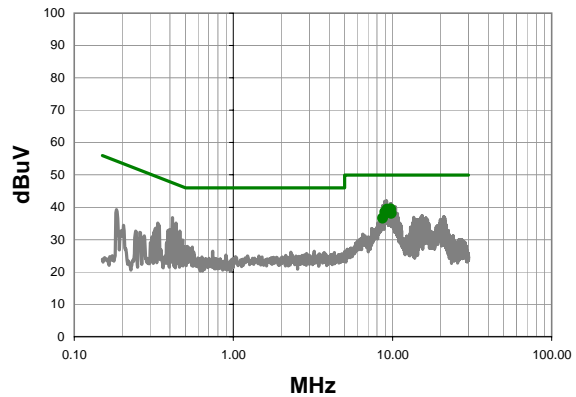
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| Test Specifications FCC 15.207:2010 | Test Method ANSI C63.10:2009 |
|---|--|

| | | | | | | | |
|--------------|---|--------------|-----------|--------------------------|----|----------------|------|
| Run # | 5 | Line: | High Line | Ext. Attenuation: | 20 | Results | Pass |
|--------------|---|--------------|-----------|--------------------------|----|----------------|------|

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Compared to Spec. (dB) |
|------------|------------------|-------------|-----------------|--------------------|------------------------|
| 9.750 | 23.4 | 20.5 | 43.9 | 60.0 | -16.1 |
| 9.260 | 23.4 | 20.5 | 43.9 | 60.0 | -16.1 |
| 9.162 | 22.9 | 20.5 | 43.4 | 60.0 | -16.6 |
| 8.966 | 22.8 | 20.5 | 43.3 | 60.0 | -16.7 |
| 9.846 | 22.1 | 20.5 | 42.6 | 60.0 | -17.4 |
| 8.674 | 21.2 | 20.5 | 41.7 | 60.0 | -18.3 |

Average Data - vs - Average Limit

| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Compared to Spec. (dB) |
|------------|------------------|-------------|-----------------|--------------------|------------------------|
| 9.750 | 18.9 | 20.5 | 39.4 | 50.0 | -10.6 |
| 9.260 | 18.8 | 20.5 | 39.3 | 50.0 | -10.7 |
| 9.162 | 18.1 | 20.5 | 38.6 | 50.0 | -11.4 |
| 8.966 | 18.0 | 20.5 | 38.5 | 50.0 | -11.5 |
| 9.846 | 17.5 | 20.5 | 38.0 | 50.0 | -12.0 |
| 8.674 | 16.1 | 20.5 | 36.6 | 50.0 | -13.4 |

EMC

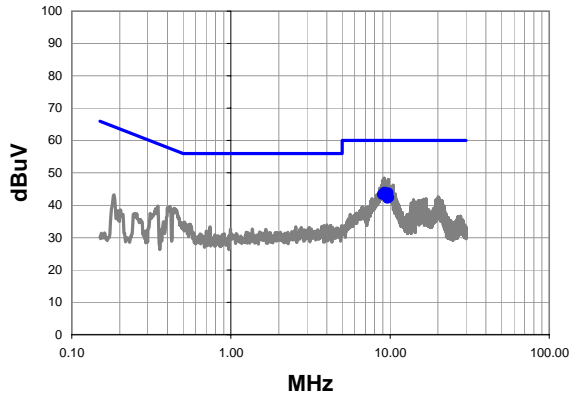
AC POWERLINE CONDUCTED EMISSIONS

| | | | | |
|------------------------|-------------------------------|--------------------------|-----------|--|
| Work Order: | LITS0005 | Date: | 05/27/10 | <i>Roddy Le Pelouin</i> Tested by: Rod Pelouin |
| Project: | None | Temperature: | 23 | |
| Job Site: | EV07 | Humidity: | 42 | |
| Serial Number: | See configurations | Barometric Pres.: | 1029.5 in | |
| EUT: | AMP-CAV | | | |
| Configuration: | 5 - AC Conducted Emissions | | | |
| Customer: | Lightspeed Technologies, Inc. | | | |
| Attendees: | None | | | |
| EUT Power: | 120VAC/60Hz | | | |
| Operating Mode: | Transmitting high channel | | | |
| Deviations: | None | | | |
| Comments: | None | | | |

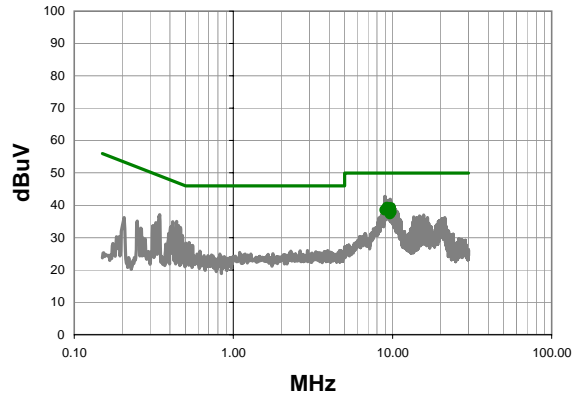
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| Test Specifications FCC 15.207:2010 | Test Method ANSI C63.10:2009 |
|---|--|

| | | | | | | | |
|--------------|---|--------------|---------|--------------------------|----|----------------|------|
| Run # | 6 | Line: | Neutral | Ext. Attenuation: | 20 | Results | Pass |
|--------------|---|--------------|---------|--------------------------|----|----------------|------|

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Compared to Spec. (dB) |
|------------|------------------|-------------|-----------------|--------------------|------------------------|
| 9.260 | 23.5 | 20.5 | 44.0 | 60.0 | -16.0 |
| 9.750 | 23.3 | 20.5 | 43.8 | 60.0 | -16.2 |
| 9.164 | 22.9 | 20.5 | 43.4 | 60.0 | -16.6 |
| 8.966 | 22.8 | 20.5 | 43.3 | 60.0 | -16.7 |
| 9.846 | 21.8 | 20.5 | 42.3 | 60.0 | -17.7 |
| 9.652 | 21.6 | 20.5 | 42.1 | 60.0 | -17.9 |

Average Data - vs - Average Limit

| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Compared to Spec. (dB) |
|------------|------------------|-------------|-----------------|--------------------|------------------------|
| 9.260 | 18.8 | 20.5 | 39.3 | 50.0 | -10.7 |
| 9.750 | 18.7 | 20.5 | 39.2 | 50.0 | -10.8 |
| 9.164 | 18.2 | 20.5 | 38.7 | 50.0 | -11.3 |
| 8.966 | 18.0 | 20.5 | 38.5 | 50.0 | -11.5 |
| 9.846 | 17.3 | 20.5 | 37.8 | 50.0 | -12.2 |
| 9.652 | 16.8 | 20.5 | 37.3 | 50.0 | -12.7 |

EMC

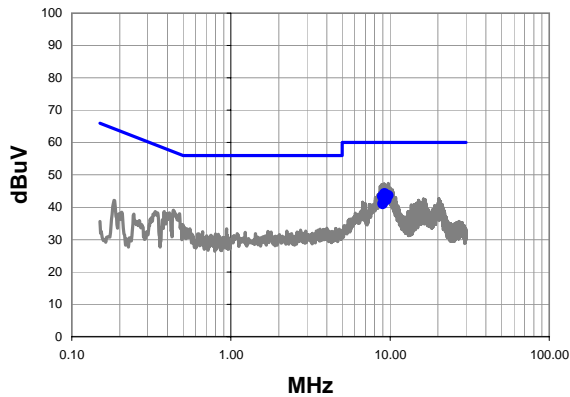
AC POWERLINE CONDUCTED EMISSIONS

| | | | | |
|------------------------|-------------------------------|--------------------------|-----------|-------------------------|
| Work Order: | LITS0005 | Date: | 05/27/10 | <i>Roddy Le Pelouin</i> |
| Project: | None | Temperature: | 23 | |
| Job Site: | EV07 | Humidity: | 42 | |
| Serial Number: | See configurations | Barometric Pres.: | 1029.5 in | |
| EUT: | AMP-CAV | | | |
| Configuration: | 5 - AC Conducted Emissions | | | |
| Customer: | Lightspeed Technologies, Inc. | | | |
| Attendees: | None | | | |
| EUT Power: | 120VAC/60Hz | | | |
| Operating Mode: | Transmitting low channel | | | |
| Deviations: | None | | | |
| Comments: | None | | | |

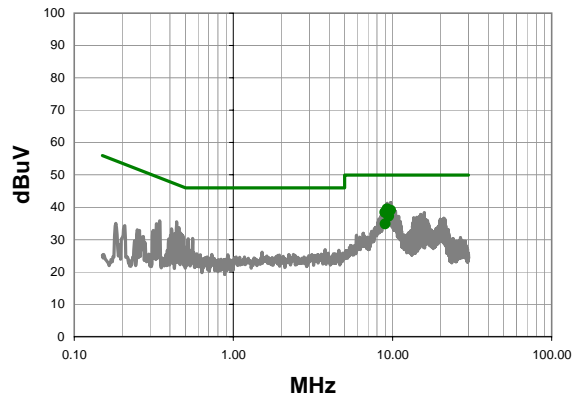
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| Test Specifications FCC 15.207:2010 | Test Method ANSI C63.10:2009 |
|---|--|

| | | | | | | | |
|--------------|---|--------------|-----------|--------------------------|----|----------------|------|
| Run # | 7 | Line: | High Line | Ext. Attenuation: | 20 | Results | Pass |
|--------------|---|--------------|-----------|--------------------------|----|----------------|------|

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Compared to Spec. (dB) |
|------------|------------------|-------------|-----------------|--------------------|------------------------|
| 9.262 | 23.7 | 20.5 | 44.2 | 60.0 | -15.8 |
| 9.750 | 23.1 | 20.5 | 43.6 | 60.0 | -16.4 |
| 9.162 | 23.0 | 20.5 | 43.5 | 60.0 | -16.5 |
| 8.966 | 22.8 | 20.5 | 43.3 | 60.0 | -16.7 |
| 9.456 | 21.7 | 20.5 | 42.2 | 60.0 | -17.8 |
| 9.010 | 20.5 | 20.5 | 41.0 | 60.0 | -19.0 |

Average Data - vs - Average Limit

| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Compared to Spec. (dB) |
|------------|------------------|-------------|-----------------|--------------------|------------------------|
| 9.262 | 18.9 | 20.5 | 39.4 | 50.0 | -10.6 |
| 9.750 | 18.5 | 20.5 | 39.0 | 50.0 | -11.0 |
| 9.162 | 18.1 | 20.5 | 38.6 | 50.0 | -11.4 |
| 8.966 | 17.9 | 20.5 | 38.4 | 50.0 | -11.6 |
| 9.456 | 16.7 | 20.5 | 37.2 | 50.0 | -12.8 |
| 9.010 | 14.3 | 20.5 | 34.8 | 50.0 | -15.2 |

EMC

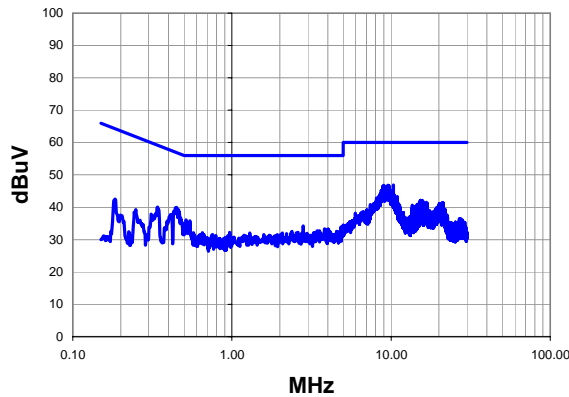
AC POWERLINE CONDUCTED EMISSIONS

| | | | | |
|------------------------|-------------------------------|--------------------------|-----------|--------------------------------|
| Work Order: | LITS0005 | Date: | 05/27/10 | <i>Roddy Le Pelouin</i> |
| Project: | None | Temperature: | 23 | |
| Job Site: | EV07 | Humidity: | 42 | |
| Serial Number: | See configurations | Barometric Pres.: | 1029.5 in | Tested by: Rod Peloquin |
| EUT: | AMP-CAV | | | |
| Configuration: | 5 - AC Conducted Emissions | | | |
| Customer: | Lightspeed Technologies, Inc. | | | |
| Attendees: | None | | | |
| EUT Power: | 120VAC/60Hz | | | |
| Operating Mode: | Transmitting low channel | | | |
| Deviations: | None | | | |
| Comments: | None | | | |

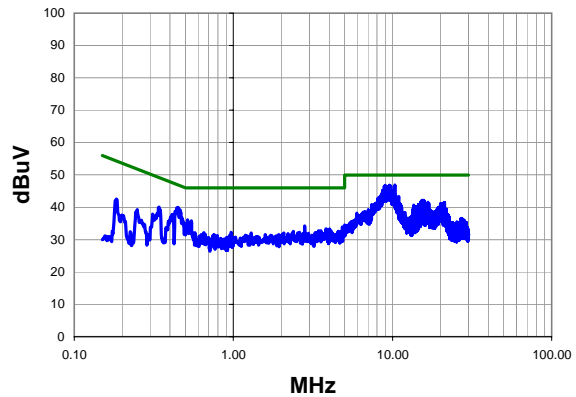
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| Test Specifications FCC 15.207:2010 | Test Method ANSI C63.10:2009 |
|---|--|

| | | | | | | | |
|--------------|---|--------------|---------|--------------------------|----|----------------|------|
| Run # | 8 | Line: | Neutral | Ext. Attenuation: | 20 | Results | Pass |
|--------------|---|--------------|---------|--------------------------|----|----------------|------|

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Compared to Spec. (dB) |
|------------|------------------|-------------|-----------------|--------------------|------------------------|
| 10.330 | 26.3 | 20.5 | 46.8 | 60.0 | -13.2 |
| 9.560 | 26.3 | 20.5 | 46.8 | 60.0 | -13.2 |
| 9.020 | 26.3 | 20.5 | 46.8 | 60.0 | -13.2 |
| 9.760 | 26.1 | 20.5 | 46.6 | 60.0 | -13.4 |
| 9.460 | 25.9 | 20.5 | 46.4 | 60.0 | -13.6 |
| 9.270 | 25.9 | 20.5 | 46.4 | 60.0 | -13.6 |
| 9.070 | 24.7 | 20.5 | 45.2 | 60.0 | -14.8 |
| 8.680 | 24.7 | 20.5 | 45.2 | 60.0 | -14.8 |
| 10.060 | 24.6 | 20.5 | 45.1 | 60.0 | -14.9 |
| 9.950 | 24.4 | 20.5 | 44.9 | 60.0 | -15.1 |
| 10.180 | 24.0 | 20.5 | 44.5 | 60.0 | -15.5 |
| 8.540 | 23.7 | 20.5 | 44.2 | 60.0 | -15.8 |
| 10.430 | 23.3 | 20.5 | 43.8 | 60.0 | -16.2 |
| 10.920 | 22.8 | 20.5 | 43.3 | 60.0 | -16.7 |
| 0.449 | 19.8 | 20.2 | 40.0 | 56.9 | -16.9 |
| 8.160 | 22.4 | 20.5 | 42.9 | 60.0 | -17.1 |
| 10.570 | 22.2 | 20.5 | 42.7 | 60.0 | -17.3 |
| 10.610 | 21.7 | 20.5 | 42.2 | 60.0 | -17.8 |
| 15.320 | 21.4 | 20.8 | 42.2 | 60.0 | -17.8 |
| 15.720 | 21.3 | 20.8 | 42.1 | 60.0 | -17.9 |

Peak Data - vs - Average Limit

| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Adjusted (dBuV) | Spec. Limit (dBuV) | Compared to Spec. (dB) |
|------------|------------------|-------------|-----------------|--------------------|------------------------|
| 10.330 | 26.3 | 20.5 | 46.8 | 50.0 | -3.2 |
| 9.560 | 26.3 | 20.5 | 46.8 | 50.0 | -3.2 |
| 9.020 | 26.3 | 20.5 | 46.8 | 50.0 | -3.2 |
| 9.760 | 26.1 | 20.5 | 46.6 | 50.0 | -3.4 |
| 9.460 | 25.9 | 20.5 | 46.4 | 50.0 | -3.6 |
| 9.270 | 25.9 | 20.5 | 46.4 | 50.0 | -3.6 |
| 9.070 | 24.7 | 20.5 | 45.2 | 50.0 | -4.8 |
| 8.680 | 24.7 | 20.5 | 45.2 | 50.0 | -4.8 |
| 10.060 | 24.6 | 20.5 | 45.1 | 50.0 | -4.9 |
| 9.950 | 24.4 | 20.5 | 44.9 | 50.0 | -5.1 |
| 10.180 | 24.0 | 20.5 | 44.5 | 50.0 | -5.5 |
| 8.540 | 23.7 | 20.5 | 44.2 | 50.0 | -5.8 |
| 10.430 | 23.3 | 20.5 | 43.8 | 50.0 | -6.2 |
| 10.920 | 22.8 | 20.5 | 43.3 | 50.0 | -6.7 |
| 0.449 | 19.8 | 20.2 | 40.0 | 46.9 | -6.9 |
| 8.160 | 22.4 | 20.5 | 42.9 | 50.0 | -7.1 |
| 10.570 | 22.2 | 20.5 | 42.7 | 50.0 | -7.3 |
| 10.610 | 21.7 | 20.5 | 42.2 | 50.0 | -7.8 |
| 15.320 | 21.4 | 20.8 | 42.2 | 50.0 | -7.8 |
| 15.720 | 21.3 | 20.8 | 42.1 | 50.0 | -7.9 |

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

| TEST EQUIPMENT | | | | | |
|---------------------------------|------------------|----------|-----|------------|----------|
| Description | Manufacturer | Model | ID | Last Cal. | Interval |
| Spectrum Analyzer | Agilent | E4440A | AFD | 6/1/2009 | 24 |
| Attenuator 20 dB, SMA M/F 26GHz | S.M. Electronics | SA26B-20 | AUY | 7/21/2009 | 13 |
| 26 GHz DC Block, SMA | Pasternack | PE8210 | AME | 10/19/2009 | 13 |
| EV06 Direct Connect Cable | ESM Cable Corp. | TT | ECA | NCR | 0 |

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION


Per ANSI C63.10, for unlicensed wireless devices unable to be configured for 100 % duty cycle even in test mode, the system should be configured for the longest duration duty cycle supported. The transmission pulse duration is that time over which the unlicensed wireless device is on and transmitting at its maximum output power.

Measurement methods defined in ANSI C63.10 are often based upon the relationship between the EUT transmission pulse duration and the sweep speed of the measurement analyzer.

The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer.

PULSE DURATION

EMC

| | | |
|---|---|---|
| EUT: AMP-CAV | | Work Order: LITS0005 |
| Serial Number: A1019 0021 | | Date: 05/25/10 |
| Customer: Lightspeed Technologies, Inc. | | Temperature: 22°C |
| Attendees: None | | Humidity: 43% |
| Project: None | | Barometric Pres.: 29.75 in |
| Tested by: Rod Peloquin | | Power: 120VAC/60Hz |
| | | Job Site: EV06 |
| TEST SPECIFICATIONS | | |
| FCC 15.247:2010 | | Test Method |
| | | ANSI C63.10:2009 |
| COMMENTS | | |
| None | | |
| DEVIATIONS FROM TEST STANDARD | | |
| No Deviations | | |
| Configuration # | 2 | Signature  |
| | | Value |

Sweep 20ms

100%

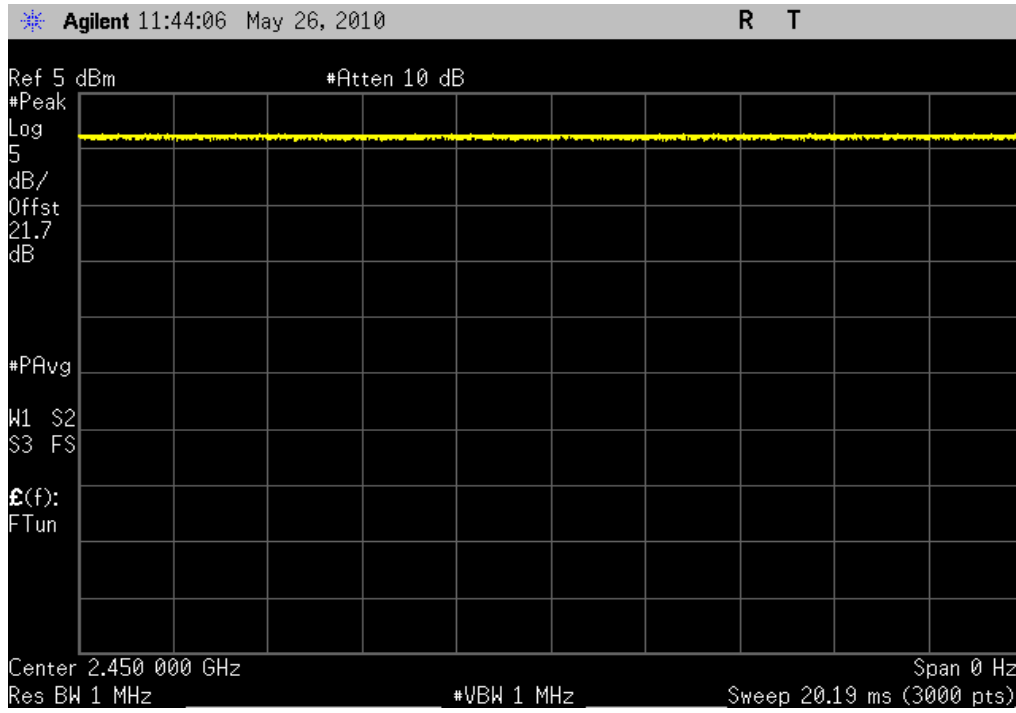
Sweep 100ms

100%

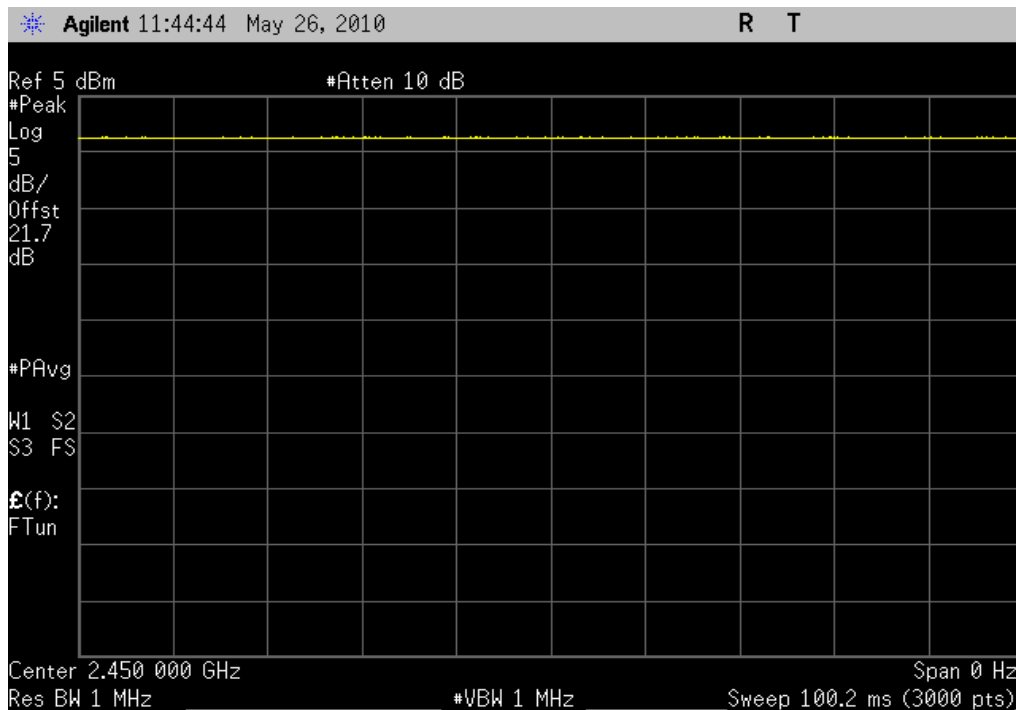
Sweep 1s

100%

Sweep 20ms
Value: 100%



Sweep 100ms
Value: 100%



Sweep 1s

Value: 100%

