Qwizdom Inc.

RF Host

EMC Test Report

January 23, 2005

Report No. PROU0007

Report Prepared By

NORTHWEST EMC

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

NORTHWEST EMC

22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

Certificate of Test

Issue Date: January 23, 2005

Qwizdom Inc

RF Host

Emissions			
Specification	**Test Method**	**Pass**	**Fail**
FCC 15.247(a)(2) Occupied Bandwidth:2004	ANSI C63.4:2003	☒	☐
FCC 15.247(b)(3) Output Power:2004	ANSI C63.4:2003	☒	☐
FCC 15.247(d) Band Edge Compliance:2004	ANSI C63.4:2003	☒	☐
FCC 15.247(d) Spurious Conducted Emissions:2004	ANSI C63.4:2003	☒	☐
FCC 15.247(d) Spurious Radiated Emissions:2004	ANSI C63.4:2003	☒	☐
FCC 15.247(e) Power Spectral Density:2004	ANSI C63.4:2003	☒	☐
FCC 15.207 AC Power Line Conducted Emissions:2004	ANSI C63.4:2003	☒	☐

Modifications made to the product

See the Modifications section of this report

Test Facility

The measurement facilities 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

The sites have been fully described in a report filed with and accepted by the FCC (Federal Communications Commission) and Industry Canada.

Approved By:

Don Facteau, IS Manager

Revision Number	Description	Date	Page Number
00	None		

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

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

200629-0
200630-0
200676-0

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

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

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

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

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

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

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

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

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

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

SCOPE

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

Explanation of Northwest EMC Performance Criteria

How important is it to understand performance criteria?

It is the responsibility of the test laboratory to observe the results of the tests that are performed and to accurately report those results. As the responsible party (manufacturer, importer, etc) it is your responsibility to take those results, compare them against the specifications and standards, then, if appropriate make a declaration of conformity. As the responsible party it makes sense that you are fully aware of the requirements, how your device performs when tested to those requirements, and what information is being used to declare conformity.

To better assist you in making those conformity decisions, Northwest EMC has adopted a very simple, yet very clear performance assessment procedure. The following criteria is used when performing immunity or susceptibility tests:

Performance Criteria 1:

- The EUT exhibited no change in performance when operating as specified by the manufacturer. In this case no changes were observed during the test.
- In most cases this would be equivalent to Performance Criteria A. When operating the equipment in the modes or configurations specified by the responsible party, monitoring the parameters specified, no changes were observed. Basically nothing happened.

Performance Criteria 2:

- The EUT exhibited a change in performance when operating as specified by the manufacturer. In this case the equipment recovered without any operator intervention, once the test signal was removed. The data sheets will detail the exact phenomena observed.
- In most cases this would be equivalent to Performance Criteria B. When operating the equipment in the modes or configurations specified by the responsible party, monitoring the parameters specified, changes were observed. The EUT was able to recover from those changes without any operator intervention, once the test signal was removed.

Performance Criteria 3:

- The EUT exhibited a change in performance when operating as specified by the manufacturer. In this case the equipment required some operator intervention in order to recover. This intervention may be in the form of changing EUT settings, or even resetting the system. The data sheets will detail the exact phenomena observed.
- In most cases this would be equivalent to Performance Criteria C. When operating the equipment in the modes or configurations specified by the responsible party, monitoring the parameters specified, changes were observed. The EUT required some sort of operator intervention to recover. There was no permanent damage and the EUT appeared to function normally after completion test.

Performance Criteria 4:

- The EUT exhibited a change in performance when operating as specified by the manufacturer. In this case the equipment was damaged and would not recover. The data sheets will detail the exact phenomena observed.
- In most cases there is no specific criterion to compare this to, it typically ends the test. When operating the equipment in the modes or configurations specified by the responsible party, monitoring the parameters specified, changes were observed. There was no recovery; the equipment would no longer function as intended.

Each of the standards and specifications has unique performance criteria. In order to make an accurate assessment, one must compare the test results provided with the specific performance criteria. **To ensure that a responsible party is compliant with the specifications, one must read and understand those specifications. Provided below is a sample performance criteria, taken from EN 61000-6-1.**

EN 61000-6-1 Performance Criteria

Performance Criteria A: *The apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.*

Performance Criteria B: *The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.*

Performance Criteria C: *Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of controls.*

How should a device perform in order for a declaration of conformity to be made?

As already stated, it is the responsible party that must interpret and understand the results in such a way that a declaration of conformity is made. Having said that, we are often asked to render our opinion as to how a device should perform. Our recommendation simply follows the standards, as can be referenced below. Most of the standards and specifications offer the same performance criterion shown below as their requirements.

Test	Performance Criteria typically specified by the Standard	Equivalent Northwest EMC Performance Criteria
ESD	Performance Criteria B	Performance Criteria 1 or 2
Radiated RF	Performance Criteria A	Performance Criteria 1
EFT/Burst	Performance Criteria B	Performance Criteria 1 or 2
Surge	Performance Criteria B	Performance Criteria 1 or 2
Conducted RF	Performance Criteria A	Performance Criteria 1
Magnetic Field	Performance Criteria A	Performance Criteria 1
Voltage Dips and Variations	Performance Criteria B & C	Performance Criteria 1, 2, or 3

What is measurement uncertainty?

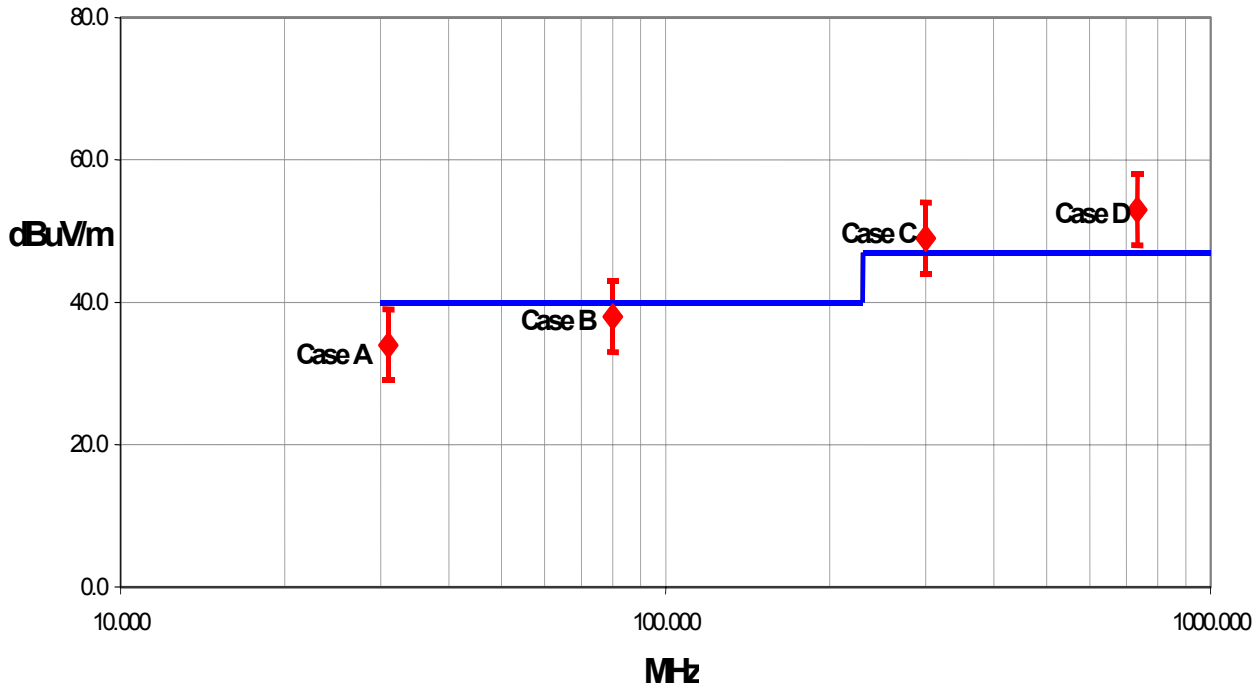
When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. The following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

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

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

How might measurement uncertainty be applied to test results?

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



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

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

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

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

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

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

Legend

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

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

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Labs OC01 – OC13

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Oregon
Trails End Facility
Labs TE01 – TE03

30475 NE Trails End Lane
Newberg, OR 97132
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FAX (503) 537-0735

Washington
Sultan Facility
Labs SU01 – SU07

14128 339th Ave. SE
Sultan, WA 98294
(888) 364-2378
FAX (360) 793-2536

Party Requesting the Test	
Company Name:	Product Creation Studio
Address:	5425 Ballard Ave NW
City, State, Zip:	Seattle, WA 98107
Test Requested By:	Scott Thielman
Model:	RF Host
First Date of Test:	12-21-2004
Last Date of Test:	01-08-2005
Receipt Date of Samples:	12-21-2004
Equipment Design Stage:	Pre-Production
Equipment Condition:	No visual damage.

Information Provided by the Party Requesting the Test

Clocks/Oscillators:	1 MHz, 6 MHz, 16 MHz, 48 MHz, 65 MHz, 256 MHz, 2.45 GHz
I/O Ports:	USB

Functional Description of the EUT (Equipment Under Test):
EUT is a network host for an Audience Response System (ARS).

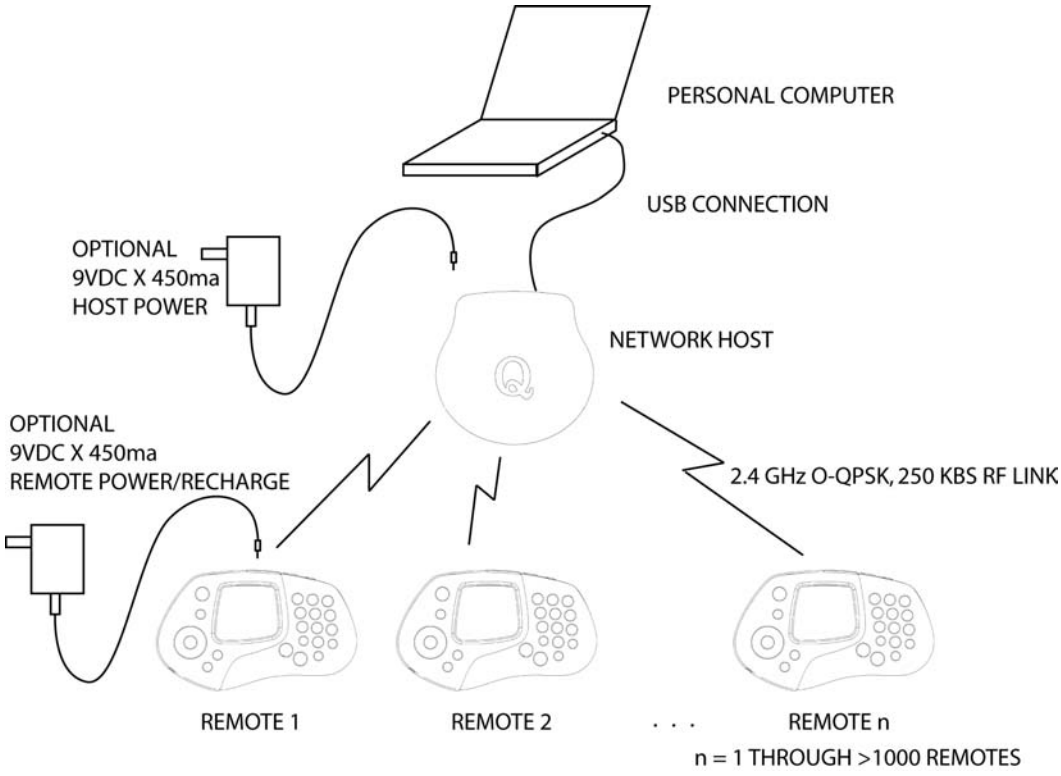
Client Justification for EUT Selection:
The product is an engineering sample, representative of the final product.

Client Justification for Test Selection:
These test satisfy the requirements for the FCC and CE mark.

EUT Information

The Audience Response System (ARS) consists of the elements shown in Figure1. A computer (laptop or desktop) connects to the network host via a USB connection. The host obtains its power from the USB connection and alternately from a regulated 9VDC wall transformer. The network host communicates to multiple audience remotes via an IEEE 802.15.4 compliant RF link. The teacher remote, Q5 RF, has more buttons and a larger graphical display, while the student remote, Q4 RF, has fewer buttons and smaller LCD. The remotes accept user feedback via the keypad and displays information on an LCD. The Q5 remotes are powered by rechargeable batteries and can be powered and recharged via a 9VDC regulated wall transformer. The Q4 remotes are powered by two AA alkaline batteries.

Figure 1


PERSONAL COMPUTER
USB CONNECTION
OPTIONAL
9VDC X 450ma
HOST POWER
NETWORK HOST
OPTIONAL
9VDC X 450ma
REMOTE POWER/RECHARGE
2.4 GHz O-QPSK, 250 KBS RF LINK
REMOTE 1
REMOTE 2
. . .
REMOTE n
n = 1 THROUGH >1000 REMOTES

Equipment modifications					
Item	Test	Date	Modification	Note	Disposition of EUT
1	Band Edge Compliance	12/20/2004	No EMI suppression devices were added or modified during this test.	Same configuration as in previous test.	EUT remained at Northwest EMC.
2	Output Power	12/20/2004	No EMI suppression devices were added or modified during this test.	Same configuration as in previous test.	EUT remained at Northwest EMC.
3	Radiated Emissions – FCC DoC	12/28/2004	No EMI suppression devices were added or modified during this test.	Same configuration as delivered.	EUT remained at Northwest EMC.
4	Conducted Emissions – FCC DoC	01/03/2005	No EMI suppression devices were added or modified during this test.	Same configuration as in previous test.	EUT remained at Northwest EMC.
5	AC Powerline Conducted Emissions	01/03/2005	No EMI suppression devices were added or modified during this test.	Same configuration as in previous test.	EUT remained at Northwest EMC.
6	Occupied Bandwidth	01/06/2005	No EMI suppression devices were added or modified during this test.	Same configuration as in previous test.	EUT remained at Northwest EMC.
7	Power Spectral Density	01/06/2005	No EMI suppression devices were added or modified during this test.	Same configuration as in previous test.	EUT remained at Northwest EMC.
8	Spurious Conducted Emissions	01/06/2005	No EMI suppression devices were added or modified during this test.	Same configuration as in previous test.	EUT remained at Northwest EMC.
9	Spurious Radiated Emissions	01/08/2005	No EMI suppression devices were added or modified during this test.	Same configuration as in previous test.	EUT remained at Northwest EMC.

Justification

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

Channels in Specified Band Investigated:
Low
Mid
High

Operating Modes Investigated:
Transmit

Data Rates Investigated:
Maximum

Output Power Setting(s) Investigated:
Maximum

Power Input Settings Investigated:
120 VAC, 60 Hz.

Software\Firmware Applied During Test			
Exercise software	TestRFGen1	**Version**	Unknown
Description			
The system was tested using standard operating production software to exercise the functions of the device during the testing including mode, channel, and power.			

EUT and Peripherals			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AC Power Adapter	CUI, Inc.	41-9-500R	N/A
EUT- RF Host	Quizdom, Inc.	RF Host	Unknown

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop PC	Acer, Inc.	Travelmate 803 LCi	LXT 2506001326031C2EF01
AC Power Adapter	DELTA, Inc.	ADP-75FB B	S4W0326044192
Equipment isolated from the EUT so as not to contribute to the measurement result is considered to be outside the test setup boundary			

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
USB	Yes	2.0		EUT- RF Host	Laptop PC
DC Leads	No	1.8	PA	AC Power Adapter	EUT- RF Host
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

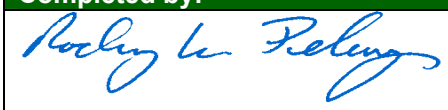
Measurement Equipment					
Description	**Manufacturer**	**Model**	**Identifier**	**Last Cal**	**Interval**
Spectrum Analyzer	Tektronix	2784	AAO	01/02/2005	12 mo

Test Description

Requirement: Per 47 CFR 15.247(a)(2), the 6 dB bandwidth of a direct sequence channel must be at least 500kHz. The measurement is made with the spectrum analyzer's resolution bandwidth set to 100kHz, and the video bandwidth set to greater than or equal to the resolution bandwidth.

Configuration: 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 using direct sequence modulation.

Completed by:



NORTHWEST EMC

EMISSIONS DATA SHEET

Rev BETA 01/30/01

EUT:	RF Host			Work Order:	PROU0007
Serial Number:	Blue			Date:	01/06/05
Customer:	Product Creation Studio			Temperature:	22°C
Attendees:	None	Tested by:	Rod Peloquin	Humidity:	30% RH
Customer Ref. No.:	N/A	Power:	120VAC/60Hz	Job Site:	EV06

TEST SPECIFICATIONS

Specification:	47 CFR 15.247(a)(2)	Year:	Most Current	Method:	FCC 97-114, ANSI C63.4	Year:	1992

SAMPLE CALCULATIONS

COMMENTS

EUT OPERATING MODES

Modulated by PRBS at maximum data rate, 802.11(b) modulation scheme

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

The minimum 6dB bandwidth is 500KHz

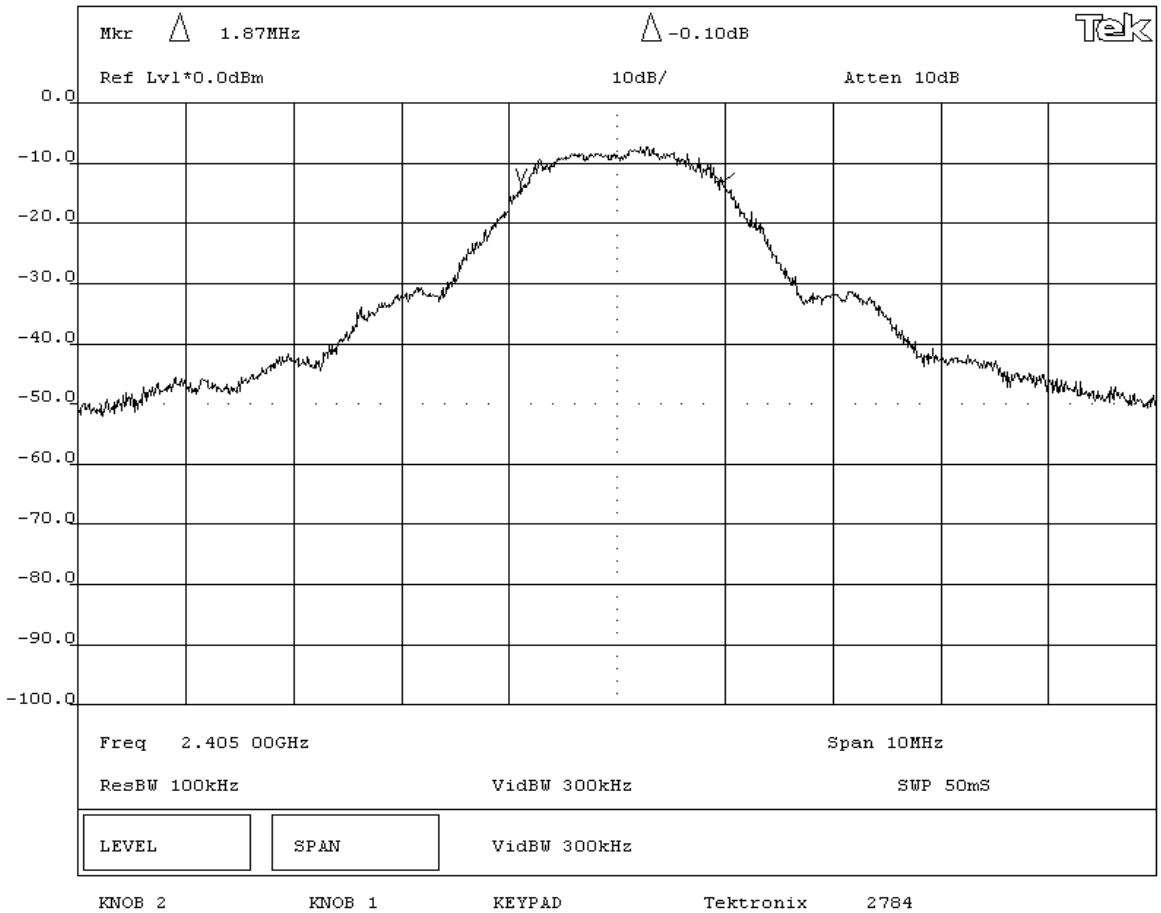
RESULTS	BANDWIDTH
Pass	1.87 MHz

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Occupied Bandwidth - Low Channel



NORTHWEST
EMC

EMISSIONS DATA SHEET

Rev BETA
01/30/01

EUT:	RF Host			Work Order:	PROU0007
Serial Number:	Blue			Date:	01/06/05
Customer:	Product Creation Studio			Temperature:	22°C
Attendees:	None	Tested by:	Rod Peloquin	Humidity:	30% RH
Customer Ref. No.:	N/A	Power:	120VAC/60Hz	Job Site:	EV06

TEST SPECIFICATIONS

Specification:	47 CFR 15.247(a)(2)	Year:	Most Current	Method:	FCC 97-114, ANSI C63.4	Year:	1992

SAMPLE CALCULATIONS

COMMENTS

EUT OPERATING MODES

Modulated by PRBS at maximum data rate, 802.11(b) modulation scheme

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

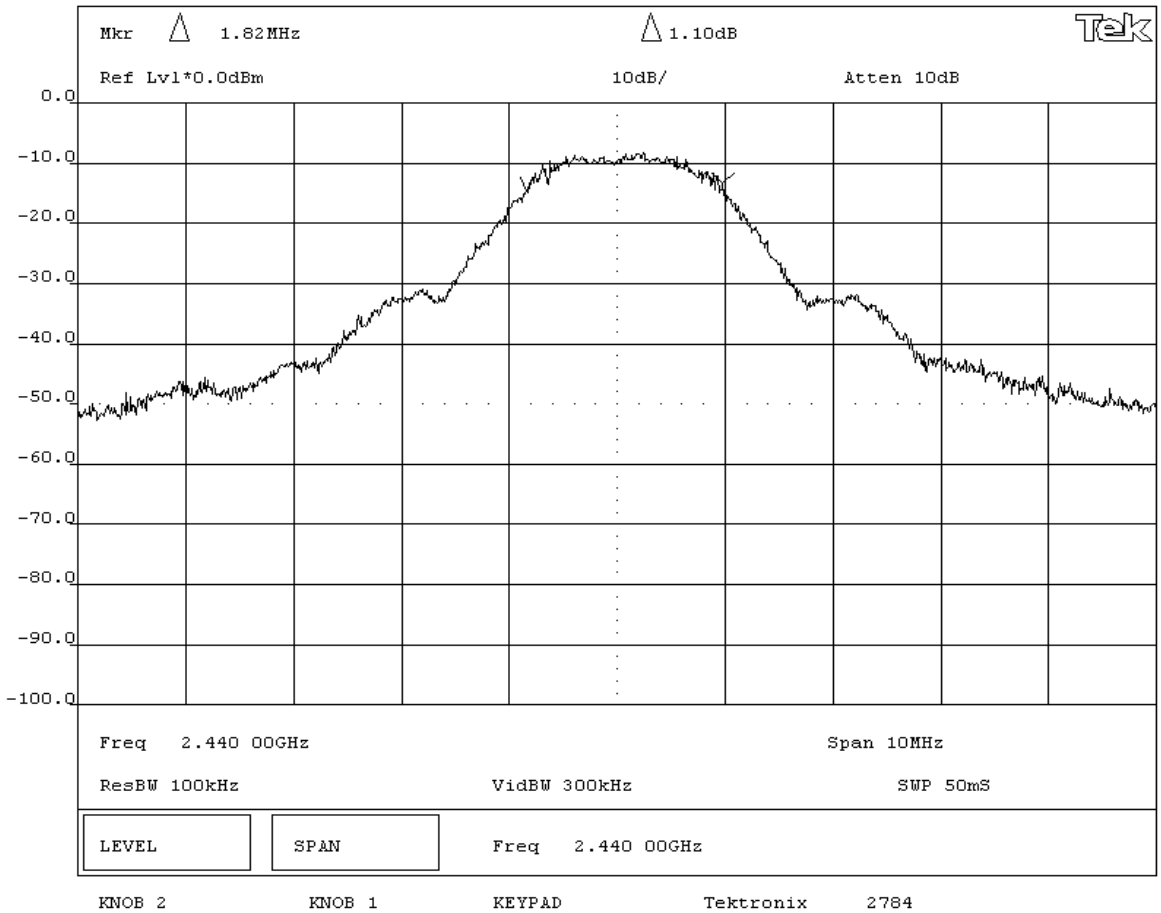
The minimum 6dB bandwidth is 500KHz

RESULTS	BANDWIDTH
Pass	1.82 MHz

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST



NORTHWEST
EMC

EMISSIONS DATA SHEET

Rev BETA
01/30/01

EUT:	RF Host			Work Order:	PROU0007
Serial Number:	Blue			Date:	01/06/05
Customer:	Product Creation Studio			Temperature:	22°C
Attendees:	None	Tested by:	Rod Peloquin	Humidity:	30% RH
Customer Ref. No.:	N/A	Power:	120VAC/60Hz	Job Site:	EV06

TEST SPECIFICATIONS

Specification:	47 CFR 15.247(a)(2)	Year:	Most Current	Method:	FCC 97-114, ANSI C63.4	Year:	1992

SAMPLE CALCULATIONS

COMMENTS

EUT OPERATING MODES

Modulated by PRBS at maximum data rate, 802.11(b) modulation scheme

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

The minimum 6dB bandwidth is 500KHz

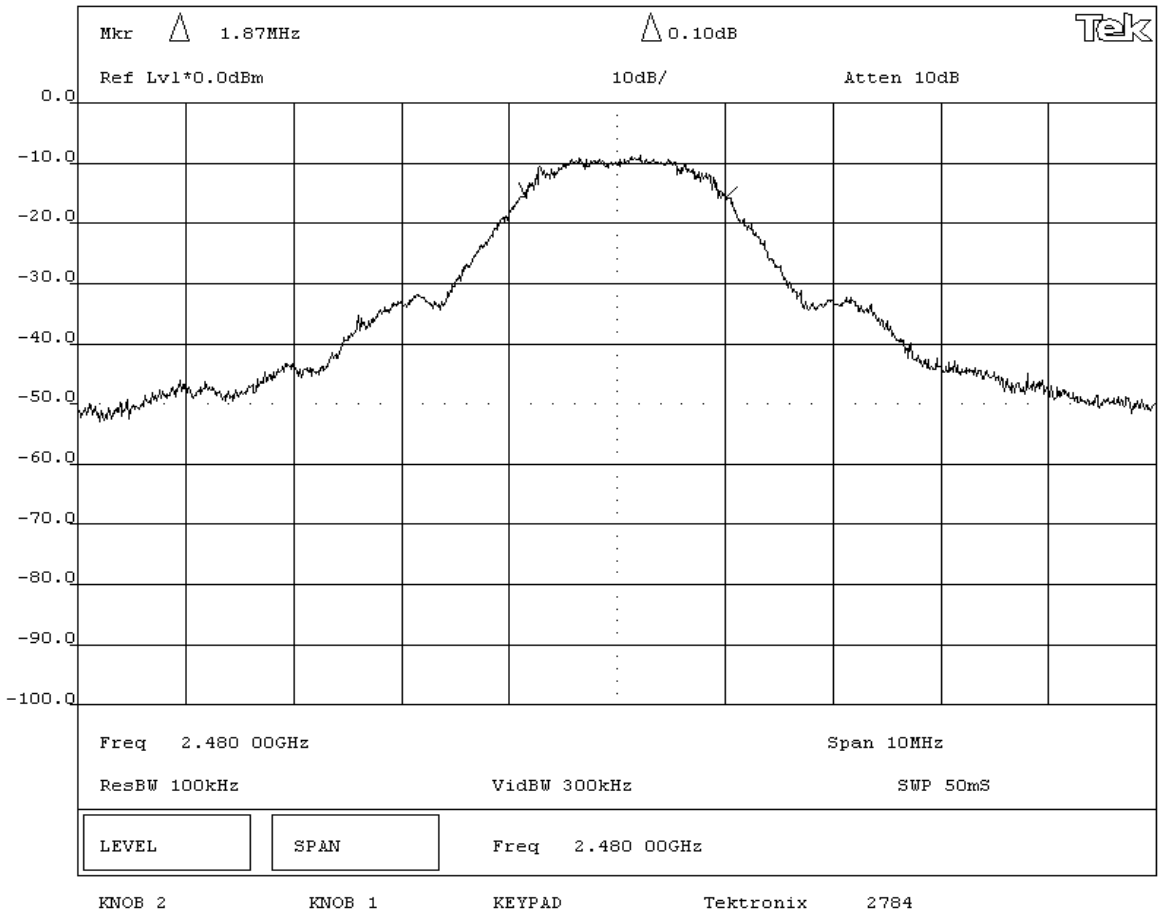
RESULTS	BANDWIDTH
Pass	1.87 MHz

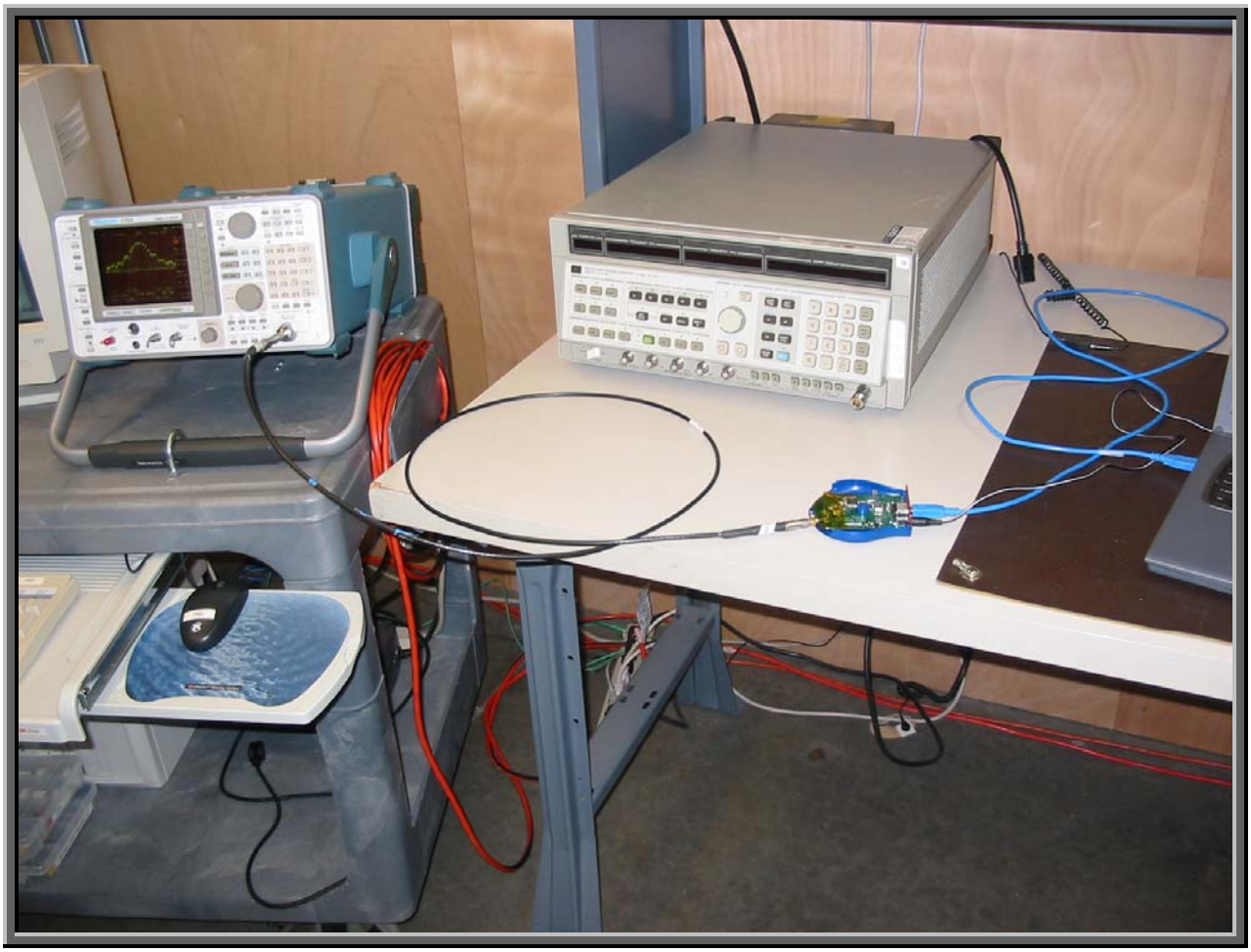
SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Occupied Bandwidth - High Channel





Justification

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

Channels in Specified Band Investigated:
Low
Mid
High

Operating Modes Investigated:
Typical

Data Rates Investigated:
Maximum

Output Power Setting(s) Investigated:
Maximum

Power Input Settings Investigated:
Powered from USB

Software\Firmware Applied During Test			
Exercise software	TestRFGen1	**Version**	Unknown
Description			
The system was tested using standard operating production software to exercise the functions of the device during the testing including mode, channel, and power.			

EUT and Peripherals			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
EUT- RF Host	Quizdom, Inc.	RF Host	Blue

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop PC	Acer, Inc.	Travelmate 803 LCi	LXT 2506001326031C2EF01
Equipment isolated from the EUT so as not to contribute to the measurement result is considered to be outside the test setup boundary			

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
USB	No	2.0	No	EUT- Network Host	Laptop PC

Measurement Equipment					
Description	**Manufacturer**	**Model**	**Identifier**	**Last Cal**	**Interval**
Power Meter	Hewlett Packard	E4418A	SPA	07/23/2004	24 mo
Power Sensor	Hewlett-Packard	8481H	SPB	07/23/2004	24 mo
Oscilloscope	Tektronix	TDS 3052	TOF	07/21/2004	12 mo
Signal Generator	Hewlett Packard	8341B	TGN	01/23/2004	13 mo
Spectrum Analyzer	Tektronix	2784	AAO	02/26/2003	24 mo

Test Description

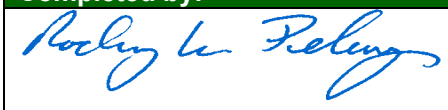
Requirement: Per 47 CFR 15.247(b)(3), the maximum peak output power must not exceed 1 Watt.

Configuration: The peak output power was measured with the EUT set to low, medium, and high transmit frequencies. The EUT was transmitting at its maximum output power. The data rate of the radio was varied to determine the level that produced the highest output power.

The measurement was made using a direct connection between the RF output of the EUT and a RF detector diode. The DC output of the diode was measured with the oscilloscope. The signal generator, tuned to the transmit frequency, was then substituted for the EUT. The CW output of the signal generator was adjusted until the DC output of the RF detector diode match the peak level produced when connected to the EUT. To further reduce measurement error, the power meter and sensor were then used to measure the output power level of the signal generator.

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

Completed by:



NORTHWEST
EMC

EMISSIONS DATA SHEET

Rev BETA
01/30/01

EUT:	RF Host			Work Order:	PROU0007
Serial Number:	Blue			Date:	12/20/04
Customer:	Product Creation Studio			Temperature:	23°C
Attendees:	Scott Thielman	Tested by:	Rod Peloquin	Humidity:	38% RH
Customer Ref. No.:	N/A	Power:	USB	Job Site:	EV06

TEST SPECIFICATIONS

Specification:	47 CFR 15.247(b)(3)	Year:	Most Current	Method:	FCC 97-114, ANSI C63.4	Year:	1992

SAMPLE CALCULATIONS

COMMENTS

EUT OPERATING MODES

Modulated at maximum data rate, at maximum output power.

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Maximum peak conducted output power does not exceed 1 Watt

RESULTS	AMPLITUDE
Pass	0.699 mW

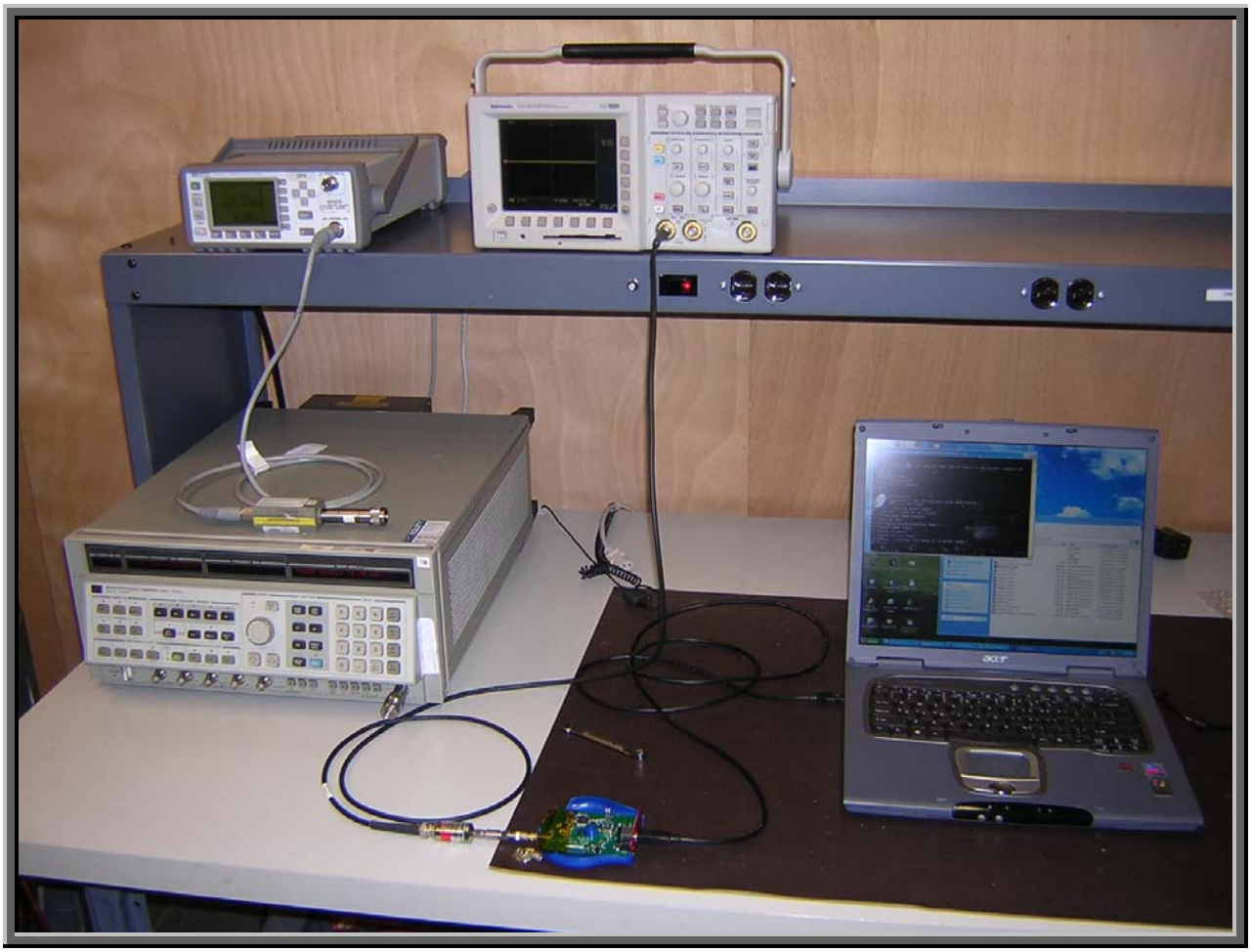
SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Output Power - Low, Mid, & High Channels

Frequency (MHz)	Power (mW)
2405	0.699
2440	0.600
2480	0.505



Justification

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

Channels in Specified Band Investigated:
Low
High

Operating Modes Investigated:
Transmit

Data Rates Investigated:
Maximum

Output Power Setting(s) Investigated:
Maximum

Power Input Settings Investigated:
120 VAC, 60 Hz.

Software\Firmware Applied During Test			
Exercise software	TestRFGen1	**Version**	Unknown
Description			
The system was tested using standard operating production software to exercise the functions of the device during the testing including mode, channel, and power.			

EUT and Peripherals			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AC Power Adapter	CUI, Inc.	41-9-500R	N/A
EUT- RF Host	Quizdom, Inc.	RF Host	Unknown

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop PC	Acer, Inc.	Travelmate 803 LCi	LXT 2506001326031C2EF01
AC Power Adapter	DELTA, Inc.	ADP-75FB B	S4W0326044192
Equipment isolated from the EUT so as not to contribute to the measurement result is considered to be outside the test setup boundary			

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
USB	Yes	2.0		EUT- RF Host	Laptop PC
DC Leads	No	1.8	PA	AC Power Adapter	EUT- RF Host
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

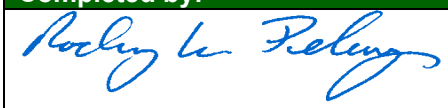
Measurement Equipment					
Description	**Manufacturer**	**Model**	**Identifier**	**Last Cal**	**Interval**
Spectrum Analyzer	Tektronix	2784	AAO	01/02/2005	12 mo

Test Description

Requirement: Per 47 CFR 15.247(c), in any 100 kHz bandwidth outside the authorized band, the maximum level of radio frequency power must be at least 20dB down from the highest emission level within the authorized band. The measurement is made with the spectrum analyzer's resolution bandwidth set to 100 kHz, and the video bandwidth set to greater than or equal to the resolution bandwidth.

Configuration: The spurious RF conducted emissions at the edges of the authorized band were measured with the EUT set to low 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 using direct sequence modulation. The channels closest to the band edges were selected. The spectrum was scanned across each band edge from 25 MHz below the band edge to 25 MHz above the band edge.

Completed by:



NORTHWEST EMC

EMISSIONS DATA SHEET

Rev BETA 01/30/01

EUT:	RF Host			Work Order:	PROU0007
Serial Number:	Unknown			Date:	12/20/04
Customer:	Product Creation Studio			Temperature:	23°C
Attendees:	Scott Thielman	Tested by:	Rod Peloquin	Humidity:	38% RH
Customer Ref. No.:	N/A	Power:	USB	Job Site:	EV06

TEST SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	Most Current	Method:	FCC 97-114, ANSI C63.4	Year:	1992

SAMPLE CALCULATIONS

COMMENTS

EUT OPERATING MODES

Modulated at maximum data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Maximum level of any spurious emission at the edge of the authorized band is 20 dB down from the fundamental

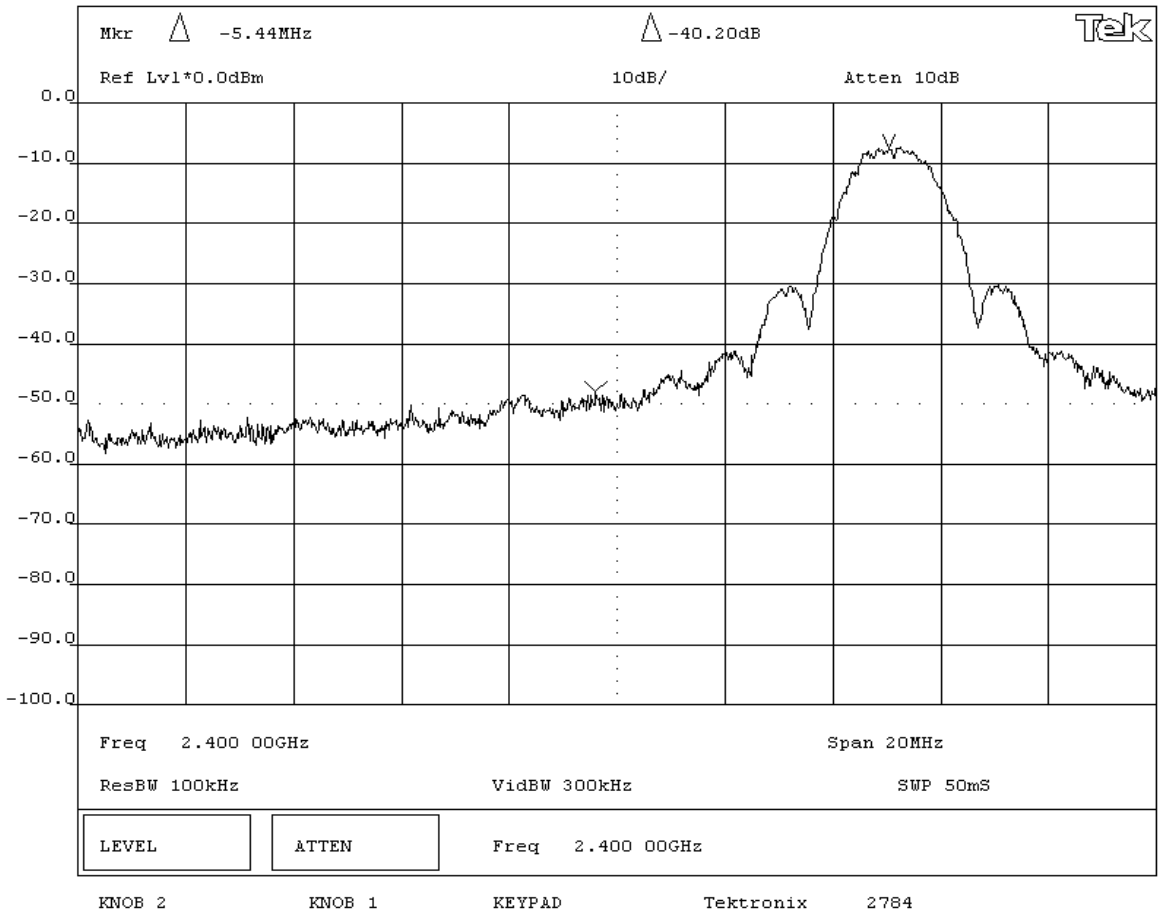
RESULTS	AMPLITUDE
Pass	-40.2 dB

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Band Edge Compliance - Low Channel



NORTHWEST
EMC

EMISSIONS DATA SHEET

Rev BETA
01/30/01

EUT:	RF Host			Work Order:	PROU0007
Serial Number:	Unknown			Date:	12/20/04
Customer:	Product Creation Studio			Temperature:	23°C
Attendees:	Scott Thielman	Tested by:	Rod Peloquin	Humidity:	38% RH
Customer Ref. No.:	N/A	Power:	USB	Job Site:	EV06

TEST SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	Most Current	Method:	FCC 97-114, ANSI C63.4	Year:	1992

SAMPLE CALCULATIONS

COMMENTS

EUT OPERATING MODES

Modulated at maximum data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Maximum level of any spurious emission at the edge of the authorized band is 20 dB down from the fundamental

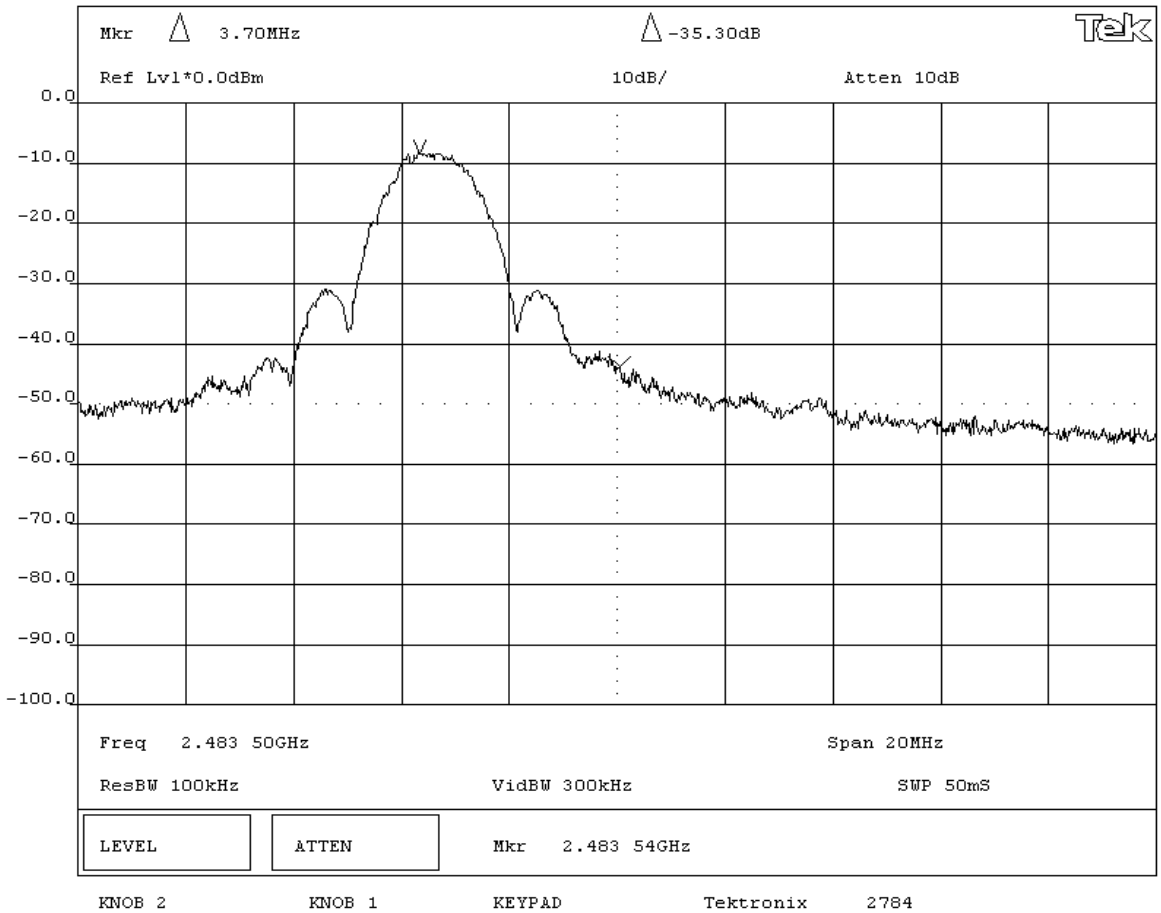
RESULTS	AMPLITUDE
Pass	-35.3 dB

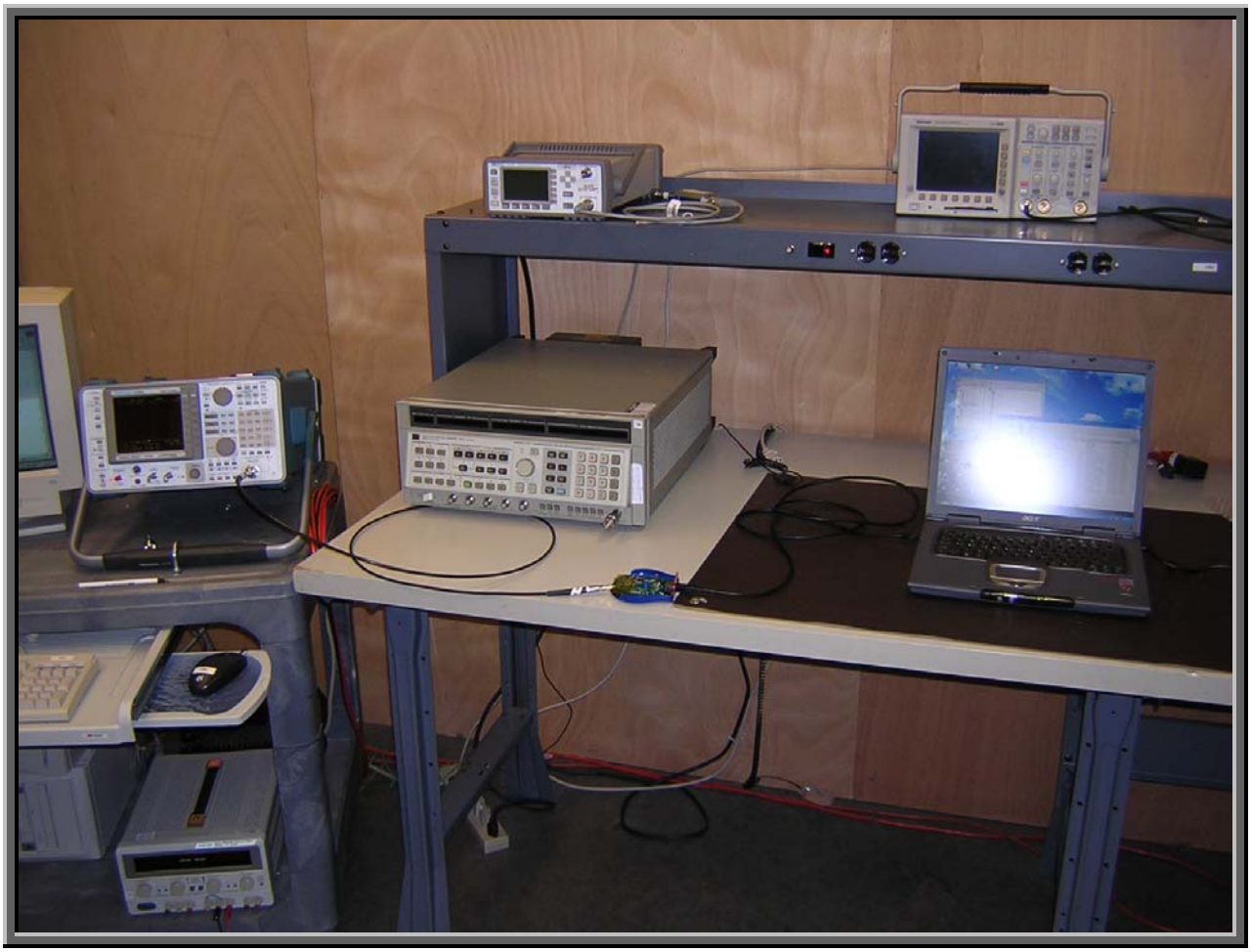
SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Band Edge Compliance - High Channel





Justification

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

Channels in Specified Band Investigated:
Low
Mid
High

Operating Modes Investigated:
Transmit

Data Rates Investigated:
Maximum

Output Power Setting(s) Investigated:
Maximum

Power Input Settings Investigated:
120 VAC, 60 Hz.

Frequency Range Investigated			
Start Frequency	0 MHz	**Stop Frequency**	25 GHz

Software\Firmware Applied During Test			
Exercise software	TestRFGen1	**Version**	Unknown
Description			
The system was tested using standard operating production software to exercise the functions of the device during the testing including mode, channel, and power.			

EUT and Peripherals			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AC Power Adapter	CUI, Inc.	41-9-500R	N/A
EUT- RF Host	Quizdom, Inc.	RF Host	Unknown

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop PC	Acer, Inc.	Travelmate 803 LCi	LXT 2506001326031C2EF01
AC Power Adapter	DELTA, Inc.	ADP-75FB B	S4W0326044192
Equipment isolated from the EUT so as not to contribute to the measurement result is considered to be outside the test setup boundary			

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
USB	Yes	2.0		EUT- RF Host	Laptop PC
DC Leads	No	1.8	PA	AC Power Adapter	EUT- RF Host
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

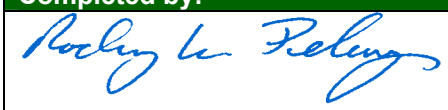
Measurement Equipment					
Description	**Manufacturer**	**Model**	**Identifier**	**Last Cal**	**Interval**
Spectrum Analyzer	Tektronix	2784	AAO	01/02/2005	12 mo

Test Description

Requirement: Per 47 CFR 15.247(c), in any 100 kHz bandwidth outside the authorized band, the maximum level of radio frequency power must be at least 20dB down from the highest emission level within the authorized band. The measurement is made with the spectrum analyzer's resolution bandwidth set to 100 kHz, and the video bandwidth set to greater than or equal to the resolution bandwidth.

Configuration: 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.

Completed by:



NORTHWEST EMC

EMISSIONS DATA SHEET

Rev BETA 01/30/01

EUT:	RF Host			Work Order:	PROU0007
Serial Number:	Unknown			Date:	01/06/05
Customer:	Product Creation Studio			Temperature:	22°C
Attendees:	None	Tested by:	Rod Peloquin	Humidity:	30% RH
Customer Ref. No.:	N/A	Power:	120VAC/60Hz	Job Site:	EV06

TEST SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year: 2004	Method:	FCC 97-114, ANSI C63.4	Year: 2003

SAMPLE CALCULATIONS

COMMENTS

EUT OPERATING MODES

Modulated by PRBS at maximum data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Maximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental

RESULTS

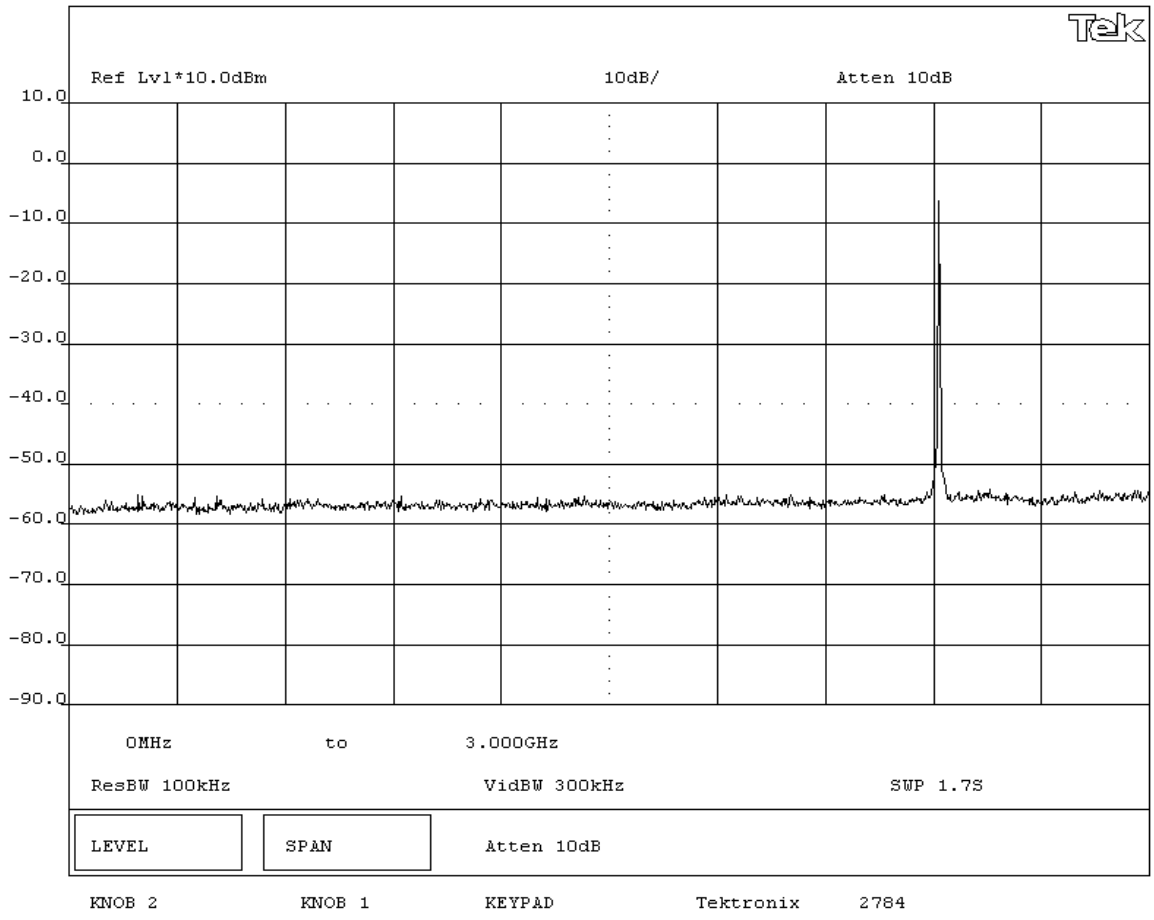
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - Low Channel 0MHz-3GHz



NORTHWEST
EMC

EMISSIONS DATA SHEET

Rev BETA
01/30/01

EUT:	RF Host			Work Order:	PROU0007
Serial Number:	Unknown			Date:	01/06/05
Customer:	Product Creation Studio			Temperature:	22°C
Attendees:	None	Tested by:	Rod Peloquin	Humidity:	30% RH
Customer Ref. No.:	N/A	Power:	120VAC/60Hz	Job Site:	EV06

TEST SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2004	Method:	FCC 97-114, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

EUT OPERATING MODES

Modulated by PRBS at maximum data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Maximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental

RESULTS

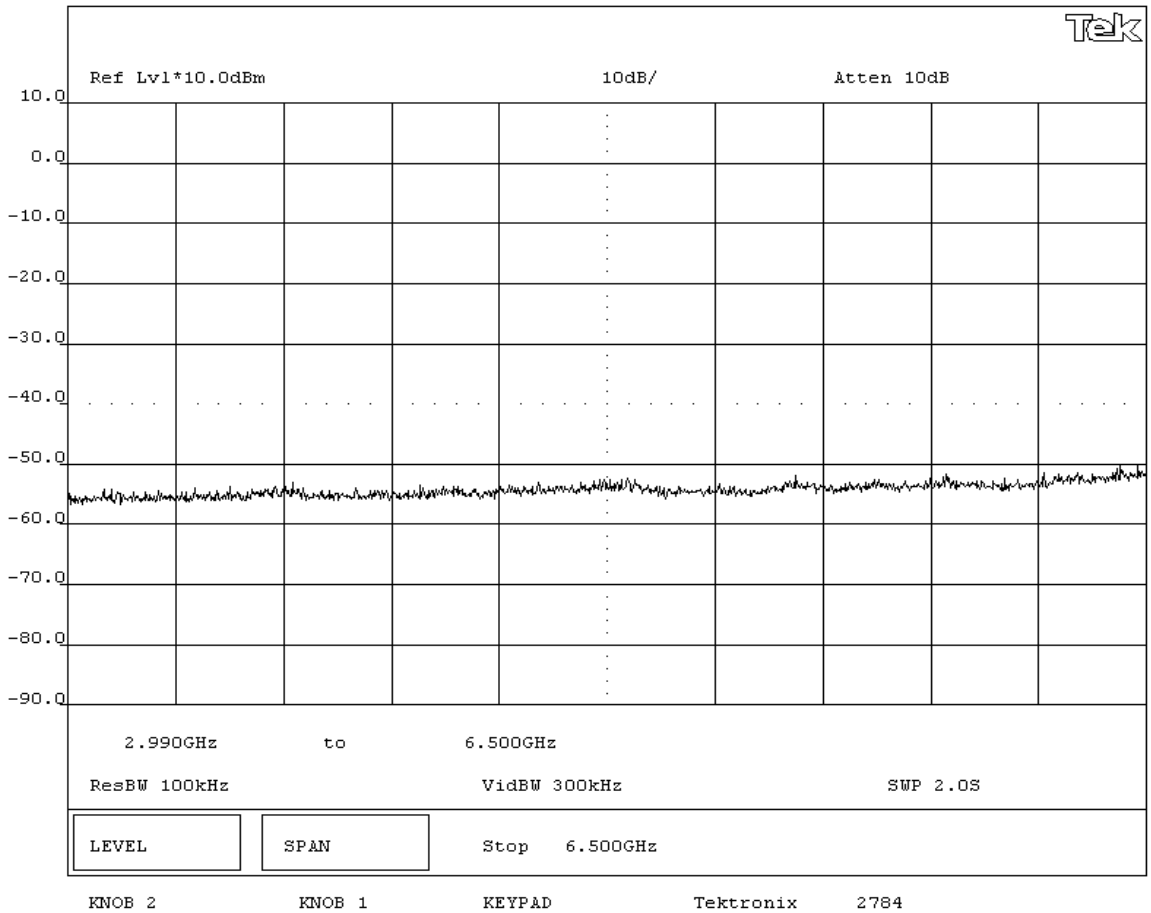
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - Low Channel 3GHz-6.5GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

Rev BETA 01/30/01

EUT:	RF Host			Work Order:	PROU0007
Serial Number:	Unknown			Date:	01/06/05
Customer:	Product Creation Studio			Temperature:	22°C
Attendees:	None	Tested by:	Rod Peloquin	Humidity:	30% RH
Customer Ref. No.:	N/A	Power:	120VAC/60Hz	Job Site:	EV06

TEST SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2004	Method:	FCC 97-114, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

EUT OPERATING MODES

Modulated by PRBS at maximum data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Maximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental

RESULTS

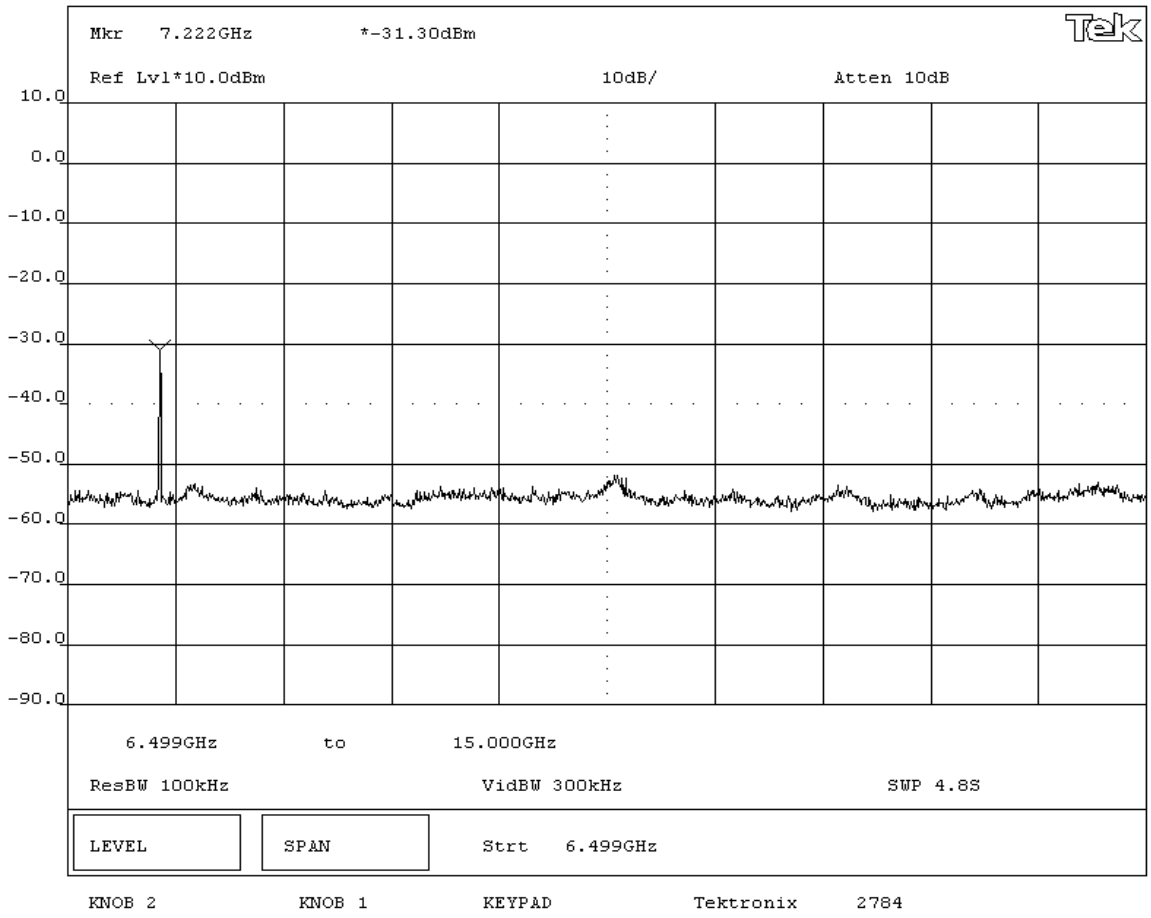
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - Low Channel 6.5GHz-15GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

Rev BETA 01/30/01

EUT:	RF Host			Work Order:	PROU0007
Serial Number:	Unknown			Date:	01/06/05
Customer:	Product Creation Studio			Temperature:	22°C
Attendees:	None	Tested by:	Rod Peloquin	Humidity:	30% RH
Customer Ref. No.:	N/A	Power:	120VAC/60Hz	Job Site:	EV06

TEST SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2004	Method:	FCC 97-114, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

EUT OPERATING MODES

Modulated by PRBS at maximum data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Maximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental

RESULTS

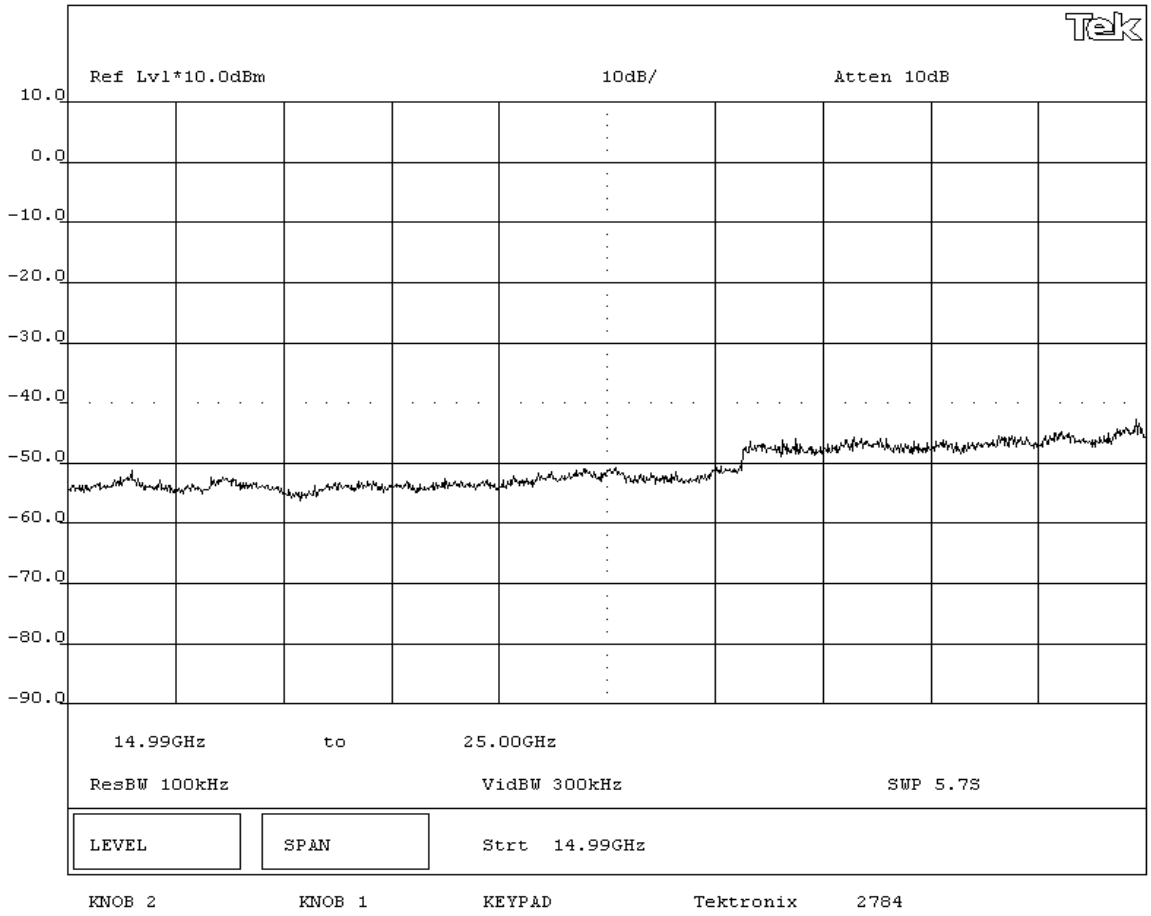
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - Low Channel 15GHz - 25GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

Rev BETA 01/30/01

EUT:	RF Host			Work Order:	PROU0007
Serial Number:	Unknown			Date:	01/06/05
Customer:	Product Creation Studio			Temperature:	22°C
Attendees:	None	Tested by:	Rod Peloquin	Humidity:	30% RH
Customer Ref. No.:	N/A	Power:	120VAC/60Hz	Job Site:	EV06

TEST SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2004	Method:	FCC 97-114, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

EUT OPERATING MODES

Modulated by PRBS at maximum data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Maximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental

RESULTS

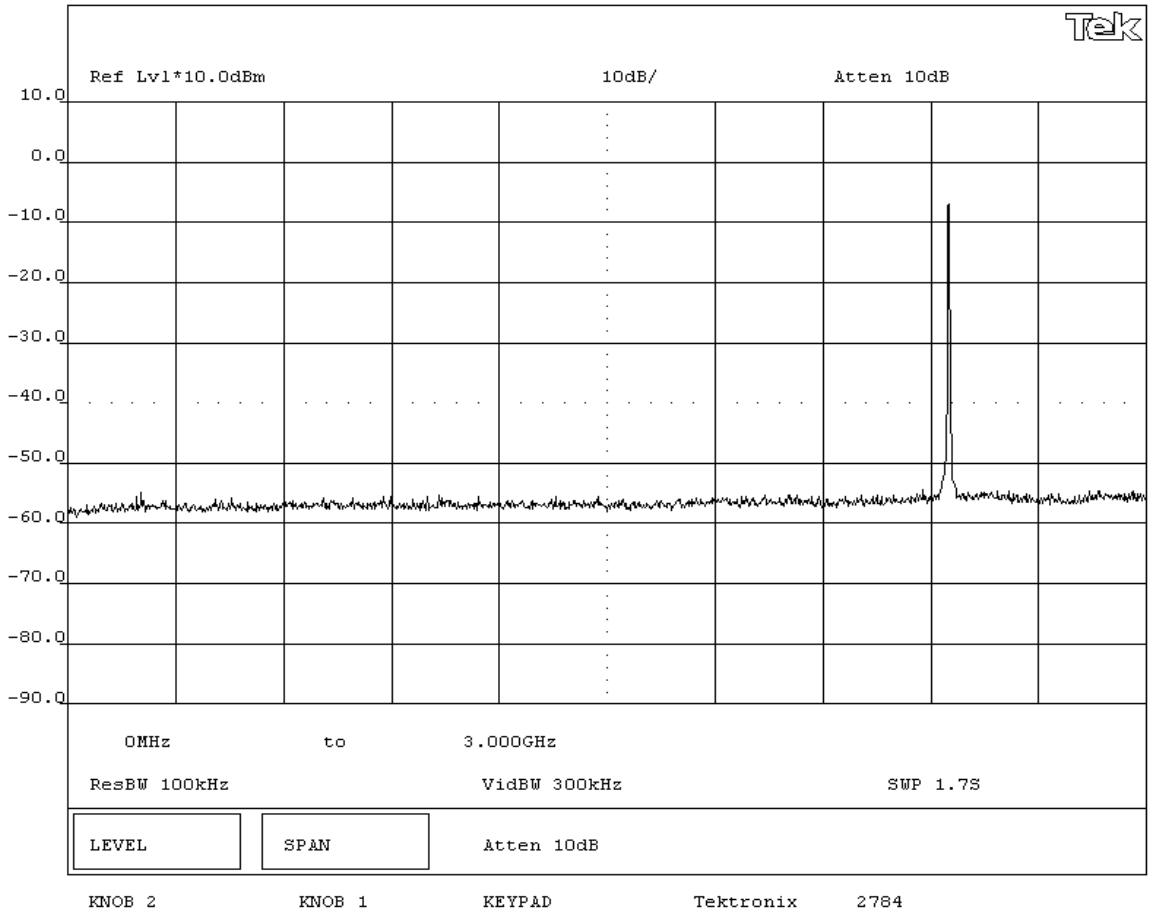
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - Mid Channel 0MHz-3GHz



NORTHWEST
EMC

EMISSIONS DATA SHEET

Rev BETA
01/30/01

EUT:	RF Host			Work Order:	PROU0007
Serial Number:	Unknown			Date:	01/06/05
Customer:	Product Creation Studio			Temperature:	22°C
Attendees:	None	Tested by:	Rod Peloquin	Humidity:	30% RH
Customer Ref. No.:	N/A	Power:	120VAC/60Hz	Job Site:	EV06

TEST SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2004	Method:	FCC 97-114, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

EUT OPERATING MODES

Modulated by PRBS at maximum data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Maximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental

RESULTS

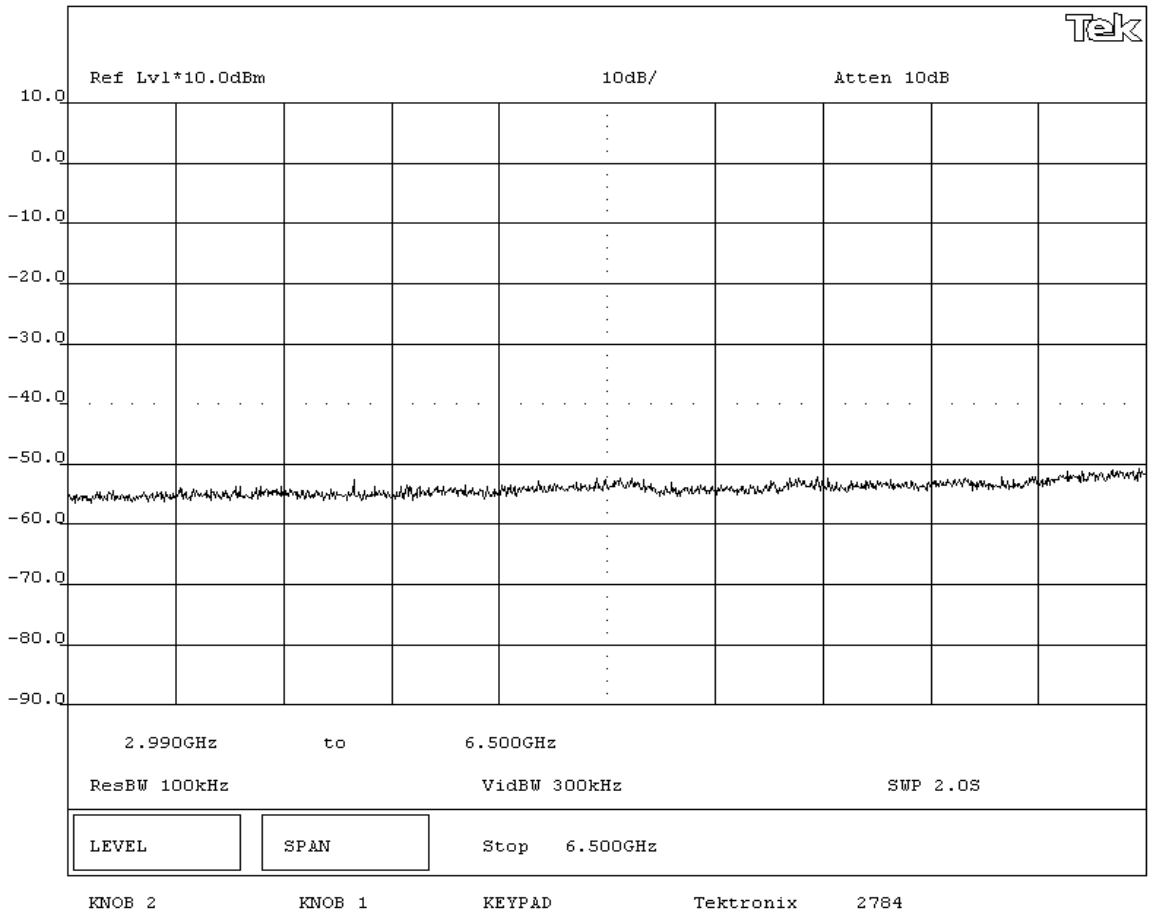
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - Mid Channel 3GHz-6.5GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

Rev BETA 01/30/01

EUT:	RF Host			Work Order:	PROU0007
Serial Number:	Unknown			Date:	01/06/05
Customer:	Product Creation Studio			Temperature:	22°C
Attendees:	None	Tested by:	Rod Peloquin	Humidity:	30% RH
Customer Ref. No.:	N/A	Power:	120VAC/60Hz	Job Site:	EV06

TEST SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2004	Method:	FCC 97-114, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

EUT OPERATING MODES

Modulated by PRBS at maximum data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Maximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental

RESULTS

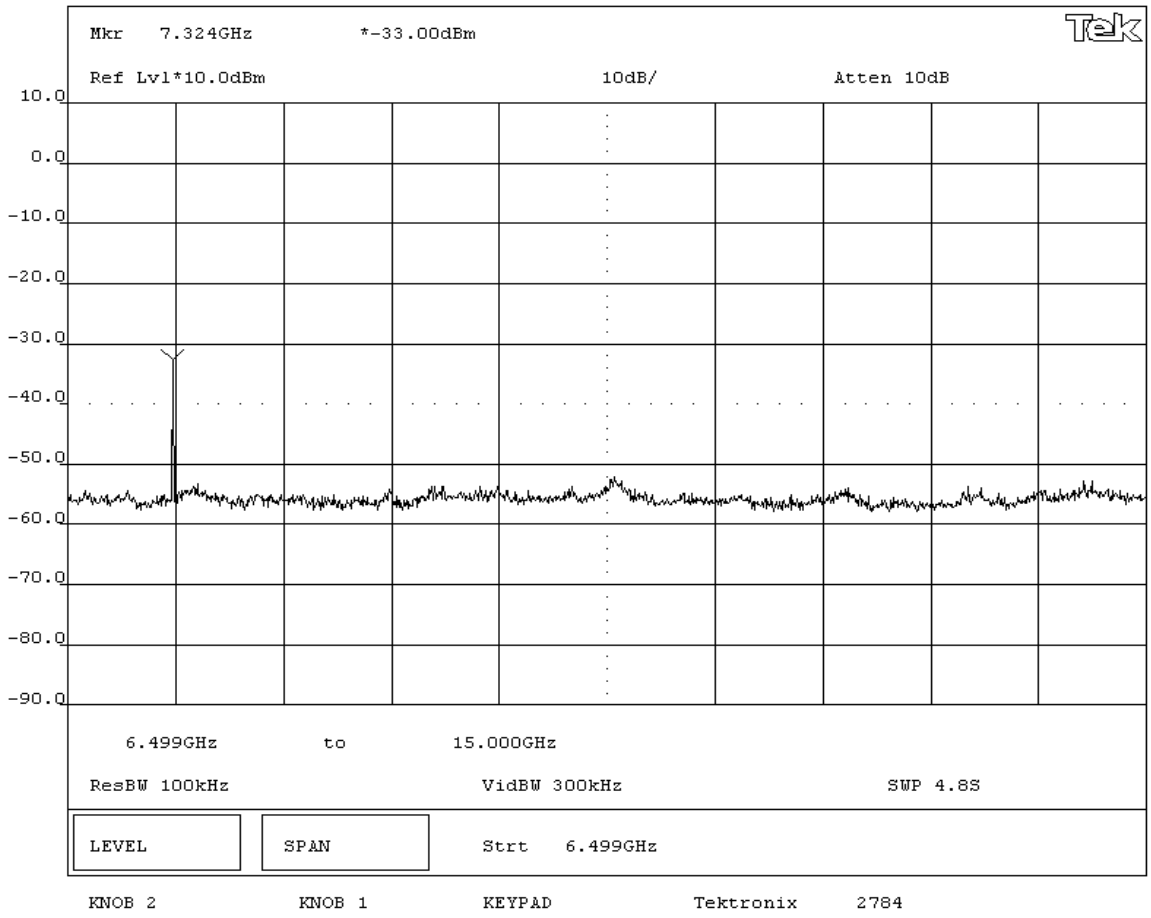
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - Mid Channel 6.5GHz-15GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

Rev BETA 01/30/01

EUT:	RF Host			Work Order:	PROU0007
Serial Number:	Unknown			Date:	01/06/05
Customer:	Product Creation Studio			Temperature:	22°C
Attendees:	None	Tested by:	Rod Peloquin	Humidity:	30% RH
Customer Ref. No.:	N/A	Power:	120VAC/60Hz	Job Site:	EV06

TEST SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2004	Method:	FCC 97-114, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

EUT OPERATING MODES

Modulated by PRBS at maximum data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Maximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental

RESULTS

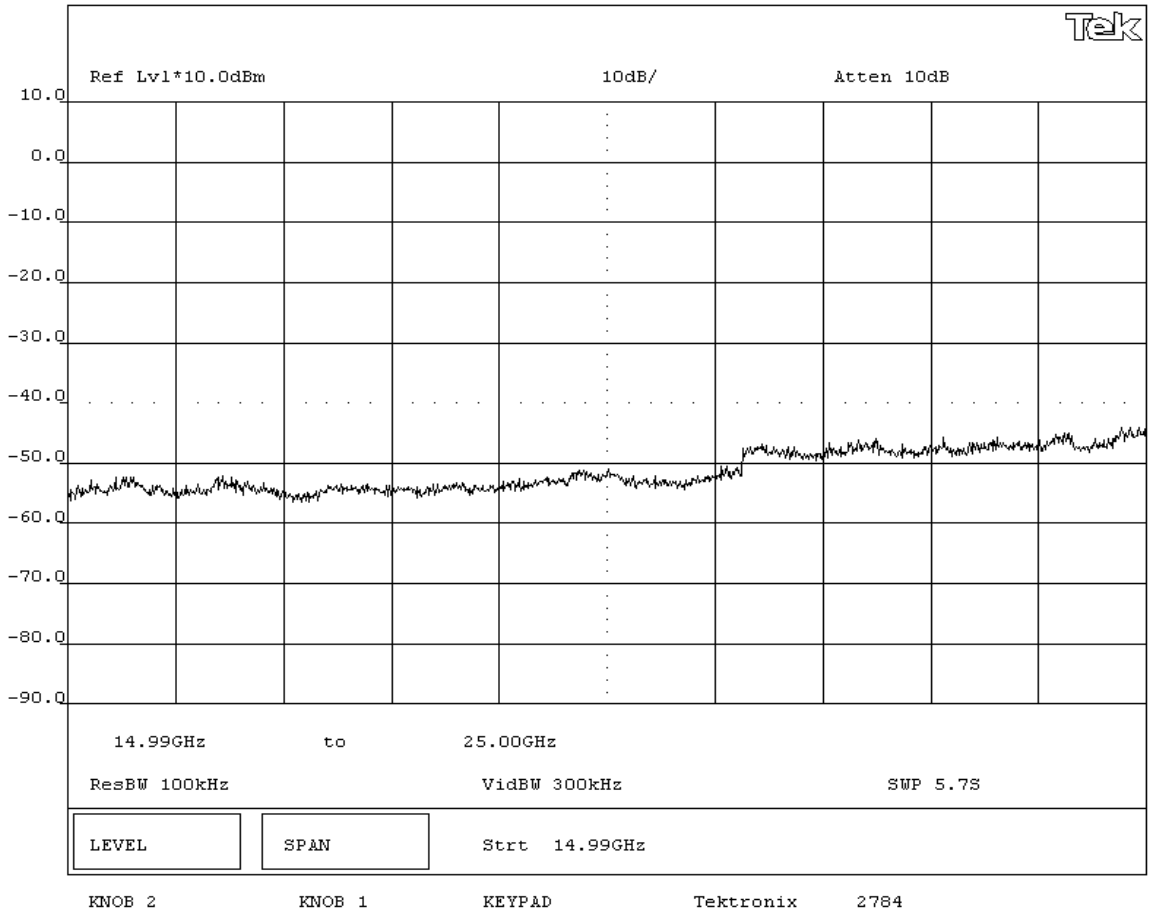
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - Mid Channel 15GHz-25GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

Rev BETA 01/30/01

EUT:	RF Host			Work Order:	PROU0007
Serial Number:	Unknown			Date:	01/06/05
Customer:	Product Creation Studio			Temperature:	22°C
Attendees:	None	Tested by:	Rod Peloquin	Humidity:	30% RH
Customer Ref. No.:	N/A	Power:	120VAC/60Hz	Job Site:	EV06

TEST SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2004	Method:	FCC 97-114, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

EUT OPERATING MODES

Modulated by PRBS at maximum data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Maximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental

RESULTS

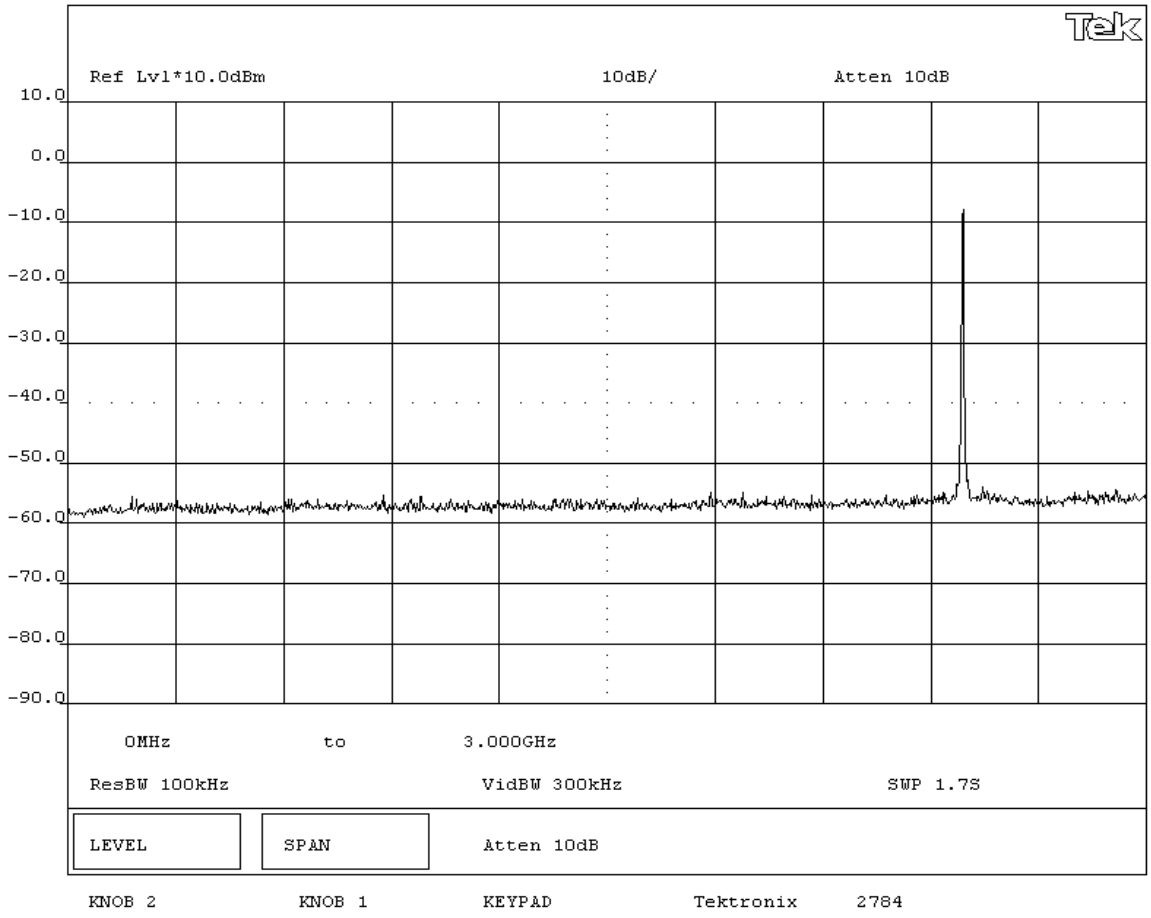
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - High Channel 0MHz-3GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

Rev BETA 01/30/01

EUT:	RF Host			Work Order:	PROU0007
Serial Number:	Unknown			Date:	01/06/05
Customer:	Product Creation Studio			Temperature:	22°C
Attendees:	None	Tested by:	Rod Peloquin	Humidity:	30% RH
Customer Ref. No.:	N/A	Power:	120VAC/60Hz	Job Site:	EV06

TEST SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2004	Method:	FCC 97-114, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

EUT OPERATING MODES

Modulated by PRBS at maximum data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Maximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental

RESULTS

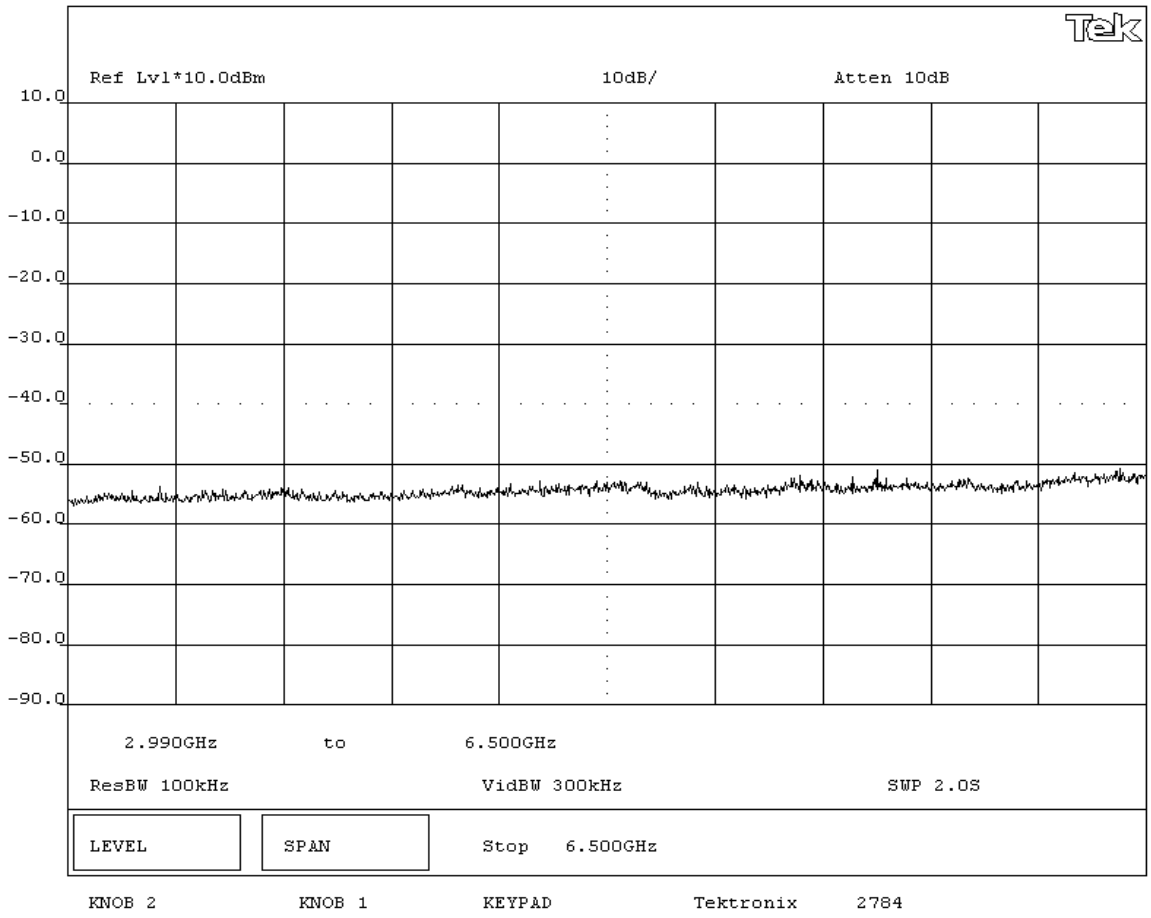
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - High Channel 3GHz-6.5GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

Rev BETA 01/30/01

EUT:	RF Host			Work Order:	PROU0007
Serial Number:	Unknown			Date:	01/06/05
Customer:	Product Creation Studio			Temperature:	22°C
Attendees:	None	Tested by:	Rod Peloquin	Humidity:	30% RH
Customer Ref. No.:	N/A	Power:	120VAC/60Hz	Job Site:	EV06

TEST SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2004	Method:	FCC 97-114, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

EUT OPERATING MODES

Modulated by PRBS at maximum data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Maximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental

RESULTS

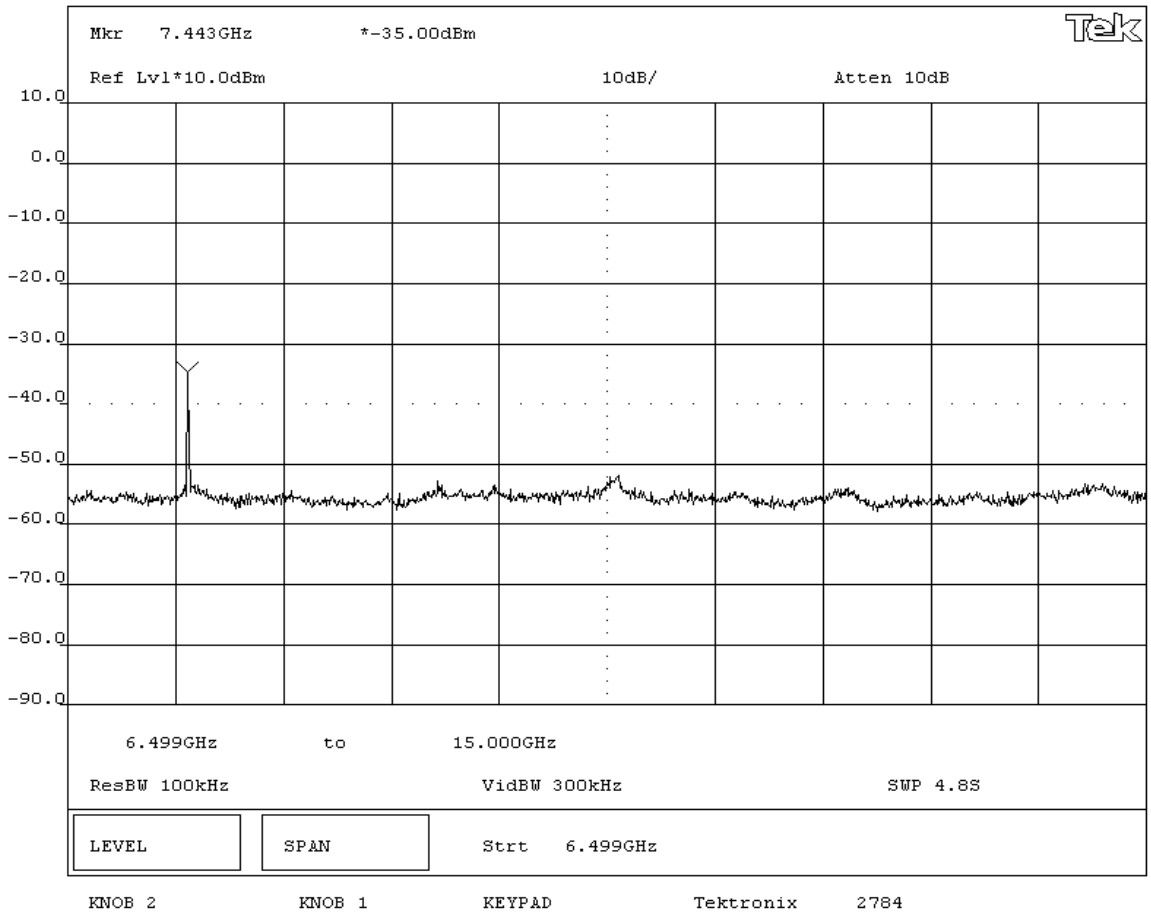
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - High Channel 6.5GHz-15GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

Rev BETA 01/30/01

EUT:	RF Host			Work Order:	PROU0007
Serial Number:	Unknown			Date:	01/06/05
Customer:	Product Creation Studio			Temperature:	22°C
Attendees:	None	Tested by:	Rod Peloquin	Humidity:	30% RH
Customer Ref. No.:	N/A	Power:	120VAC/60Hz	Job Site:	EV06

TEST SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2004	Method:	FCC 97-114, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

EUT OPERATING MODES

Modulated by PRBS at maximum data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Maximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental

RESULTS

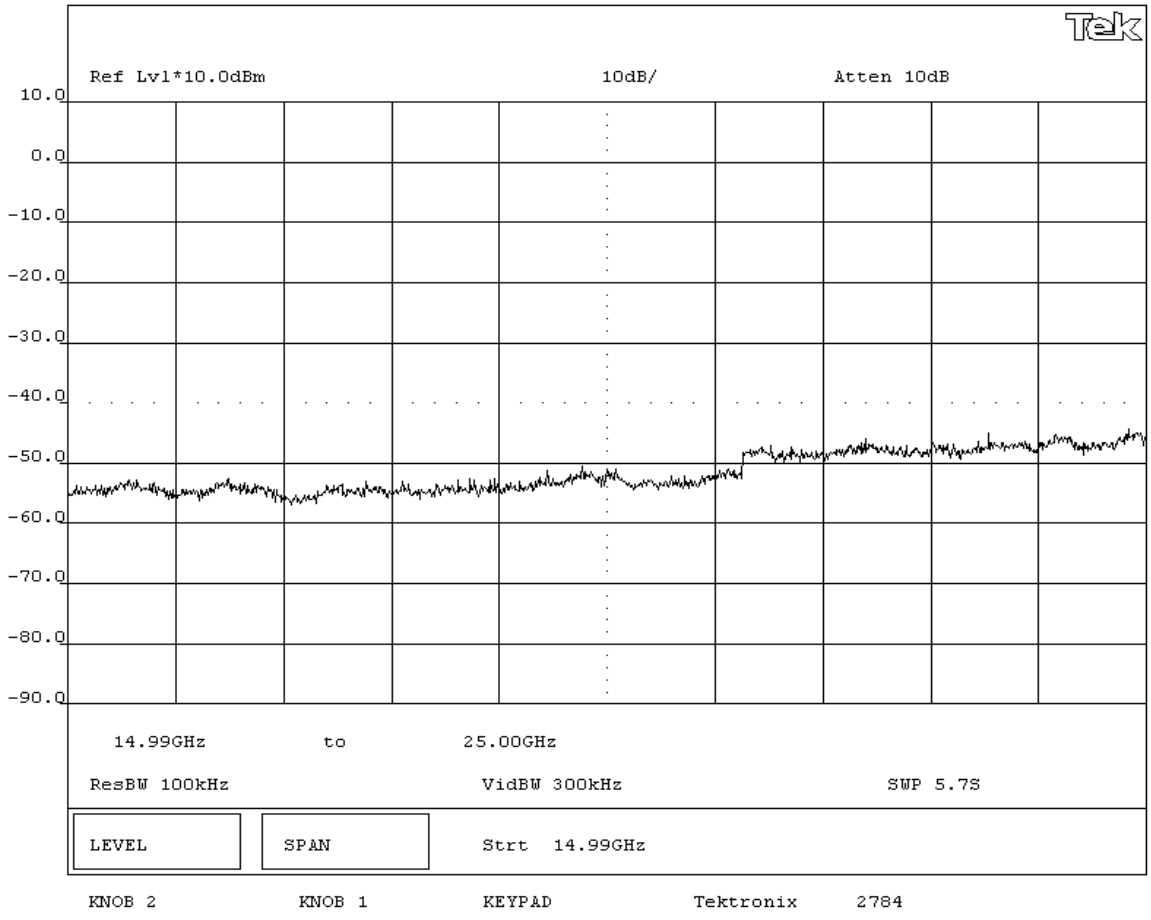
Pass

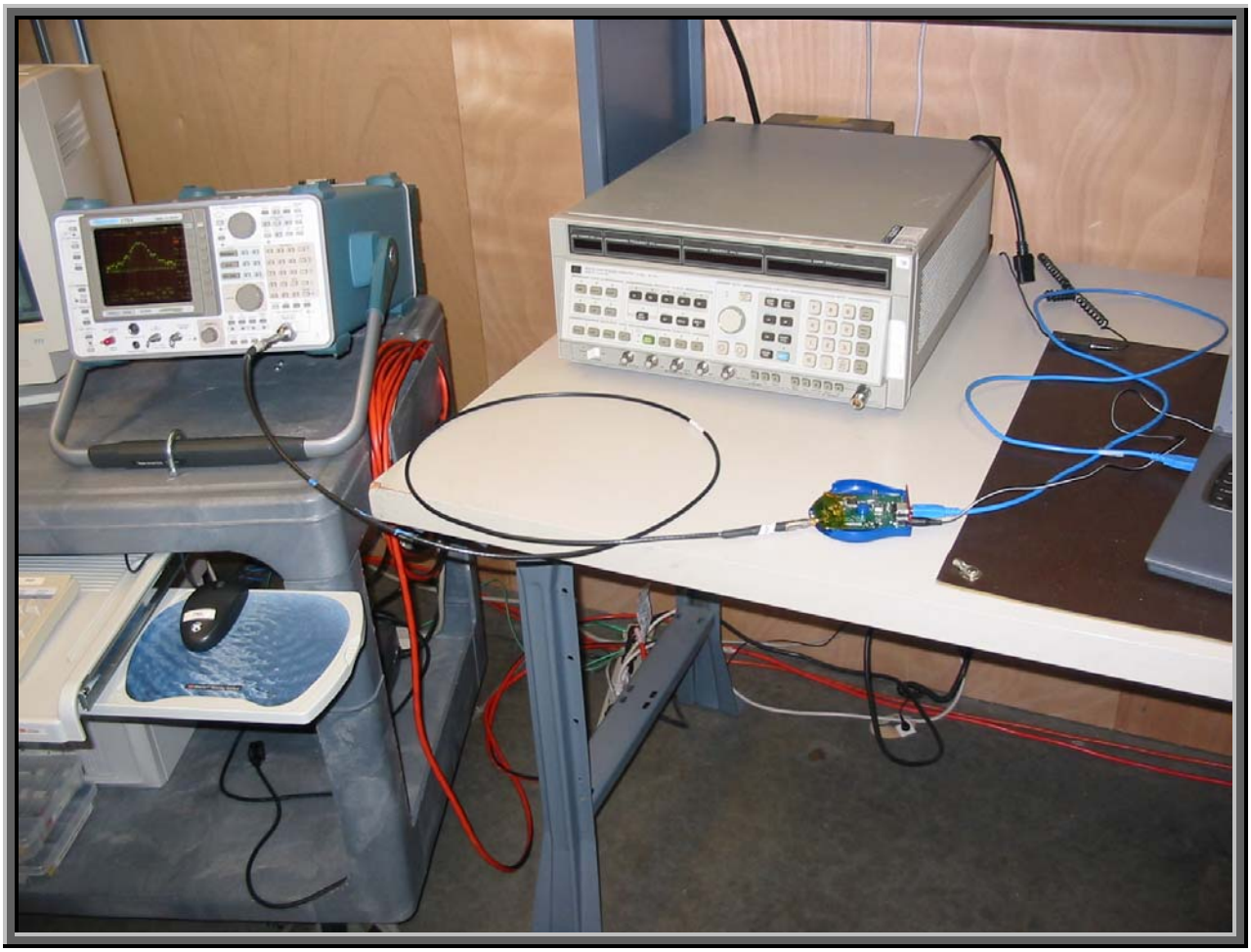
SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - High Channel 15GHz-25GHz





Justification

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

Channels in Specified Band Investigated:
Low
Mid
High

Operating Modes Investigated:
Transmit

Data Rates Investigated:
Maximum

Output Power Setting(s) Investigated:
Maximum

Power Input Settings Investigated:
120 VAC, 60 Hz.

Software\Firmware Applied During Test			
Exercise software	TestRFGen1	**Version**	Unknown
Description			
The system was tested using standard operating production software to exercise the functions of the device during the testing including mode, channel, and power.			

EUT and Peripherals			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AC Power Adapter	CUI, Inc.	41-9-500R	N/A
EUT- RF Host	Quizdom, Inc.	RF Host	Unknown

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop PC	Acer, Inc.	Travelmate 803 LCi	LXT 2506001326031C2EF01
AC Power Adapter	DELTA, Inc.	ADP-75FB B	S4W0326044192
Equipment isolated from the EUT so as not to contribute to the measurement result is considered to be outside the test setup boundary			

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
USB	Yes	2.0		EUT- RF Host	Laptop PC
DC Leads	No	1.8	PA	AC Power Adapter	EUT- RF Host
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Measurement Equipment					
Description	**Manufacturer**	**Model**	**Identifier**	**Last Cal**	**Interval**
Spectrum Analyzer	Tektronix	2784	AAO	01/02/2005	12 mo

Test Description

Requirement: Per 47 CFR 15.247(e), the peak power spectral density conducted from the antenna port of a direct sequence transmitter must not be greater than +8 dBm in any 3 kHz band during any time interval of continuous transmission.

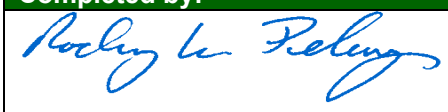
Configuration: The peak power spectral density measurements were measured with the EUT set to low, mid, and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its maximum data rate using direct sequence modulation. Per the procedure outlined in FCC 97-114, the spectrum analyzer was used as follows:

The emission peak(s) were located and zoom in on within the passband. The resolution bandwidth was set to 3 kHz, the video bandwidth was set to greater than or equal to the resolution bandwidth. The sweep speed was set equal to the span divided by 3 kHz (sweep = (SPAN/3 kHz)). For example, given a span of 1.5 MHz, the sweep should be 1.5 x 106 ÷ 3 x 103 = 500 seconds. External attenuation was used and added to the reading. The following FCC procedure was used for modifying the power spectral density measurements:

"If the spectrum line spacing cannot be resolved on the available spectrum analyzer, the noise density function on most modern conventional spectrum analyzers will directly measure the noise power density normalized to a 1 Hz noise power bandwidth. Add 34.8 dB for correction to 3 kHz."

The spectrum analyzer power reading was calibrated prior to testing using the power meter, power sensor, and signal generator via the substitution method.
.

Completed by:



NORTHWEST EMC

EMISSIONS DATA SHEET

Rev BETA 01/30/01

EUT:	RF Host			Work Order:	PROU0007
Serial Number:	Unknown			Date:	01/06/05
Customer:	Product Creation Studio			Temperature:	22°C
Attendees:	None	Tested by:	Rod Peloquin	Humidity:	30% RH
Customer Ref. No.:	N/A	Power:	120VAC/60Hz	Job Site:	EV06

TEST SPECIFICATIONS

Specification:	47 CFR 15.247(e)	Year:	2004	Method:	FCC 97-114, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

Meter reading on spectrum analyzer is internally compensated for cable loss and external attenuation.
Power Spectral Density per 3kHz bandwidth = Power Spectral Density per 1 Hz bandwidth + Bandwidth Correction Factor.
Bandwidth Correction Factor = 10*log(3kHz/1Hz) = 34.8 dB

COMMENTS

EUT OPERATING MODES

Modulated by PRBS at maximum data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Maximum peak power spectral density conducted from a DSSS transmitter does not exceed 8 dBm in any 3 kHz band

RESULTS | **AMPLITUDE**

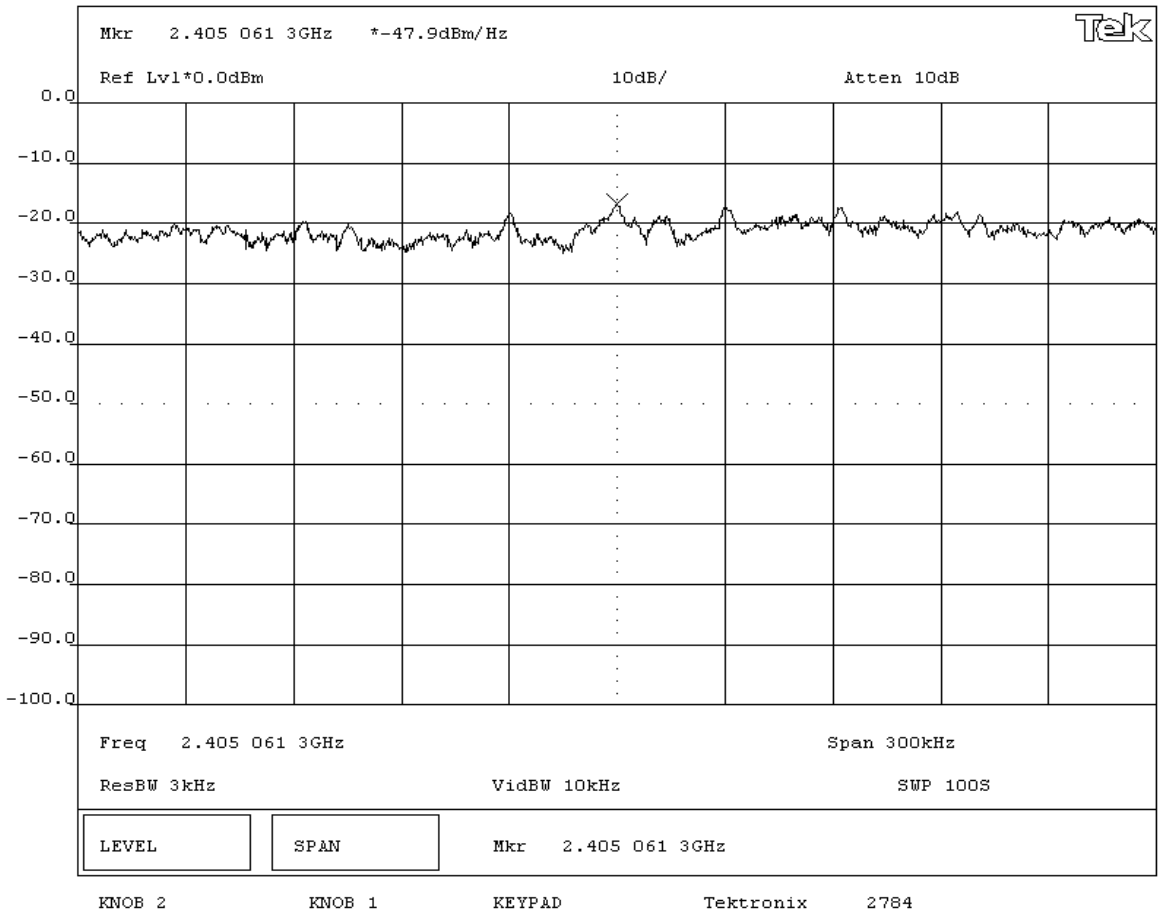
Pass | Power Spectral Density = -13.1 dBm / 3kHz

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Power Spectral Density - Low Channel



NORTHWEST EMC

EMISSIONS DATA SHEET

Rev BETA 01/30/01

EUT:	RF Host			Work Order:	PROU0007
Serial Number:	Unknown			Date:	01/06/05
Customer:	Product Creation Studio			Temperature:	22°C
Attendees:	None	Tested by:	Rod Peloquin	Humidity:	30% RH
Customer Ref. No.:	N/A	Power:	120VAC/60Hz	Job Site:	EV06

TEST SPECIFICATIONS

Specification:	47 CFR 15.247(e)	Year:	2004	Method:	FCC 97-114, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

Meter reading on spectrum analyzer is internally compensated for cable loss and external attenuation

Power Spectral Density per 3kHz bandwidth = Power Spectral Density per 1 Hz bandwidth + Bandwidth Correction Factor.

Bandwidth Correction Factor = 10*log(3kHz/1Hz) = 34.8 dB

COMMENTS

EUT OPERATING MODES

Modulated by PRBS at maximum data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Maximum peak power spectral density conducted from a DSSS transmitter does not exceed 8 dBm in any 3 kHz band

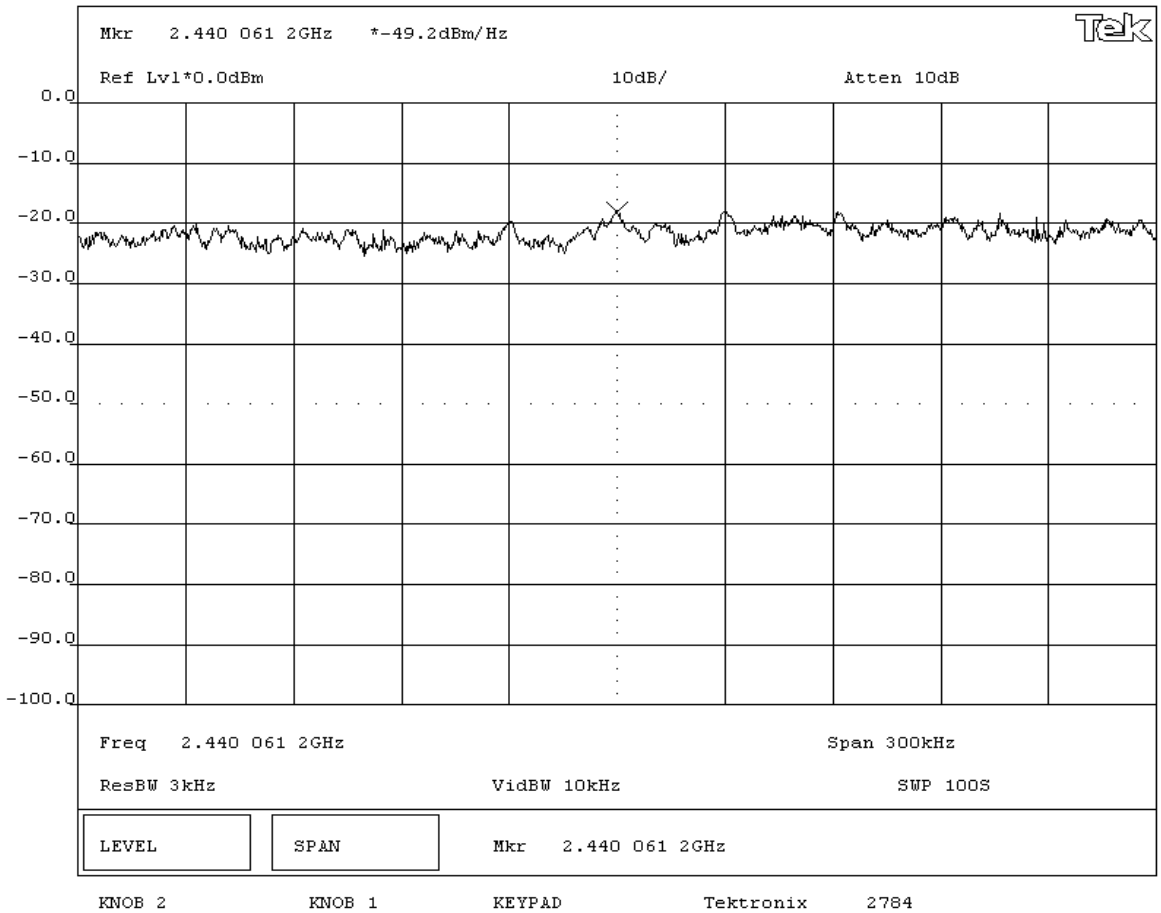
RESULTS	AMPLITUDE
Pass	Power Spectral Density = - dBm / 3kHz

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Power Spectral Density - Mid Channel



NORTHWEST EMC

EMISSIONS DATA SHEET

Rev BETA 01/30/01

EUT:	RF Host			Work Order:	PROU0007
Serial Number:	Unknown			Date:	01/06/05
Customer:	Product Creation Studio			Temperature:	22°C
Attendees:	None	Tested by:	Rod Peloquin	Humidity:	30% RH
Customer Ref. No.:	N/A	Power:	120VAC/60Hz	Job Site:	EV06

TEST SPECIFICATIONS

Specification:	47 CFR 15.247(e)	Year:	2004	Method:	FCC 97-114, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

Meter reading on spectrum analyzer is internally compensated for cable loss and external attenuation

Power Spectral Density per 3kHz bandwidth = Power Spectral Density per 1 Hz bandwidth + Bandwidth Correction Factor.

Bandwidth Correction Factor = 10*log(3kHz/1Hz) = 34.8 dB

COMMENTS

EUT OPERATING MODES

Modulated by PRBS at maximum data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Maximum peak power spectral density conducted from a DSSS transmitter does not exceed 8 dBm in any 3 kHz band

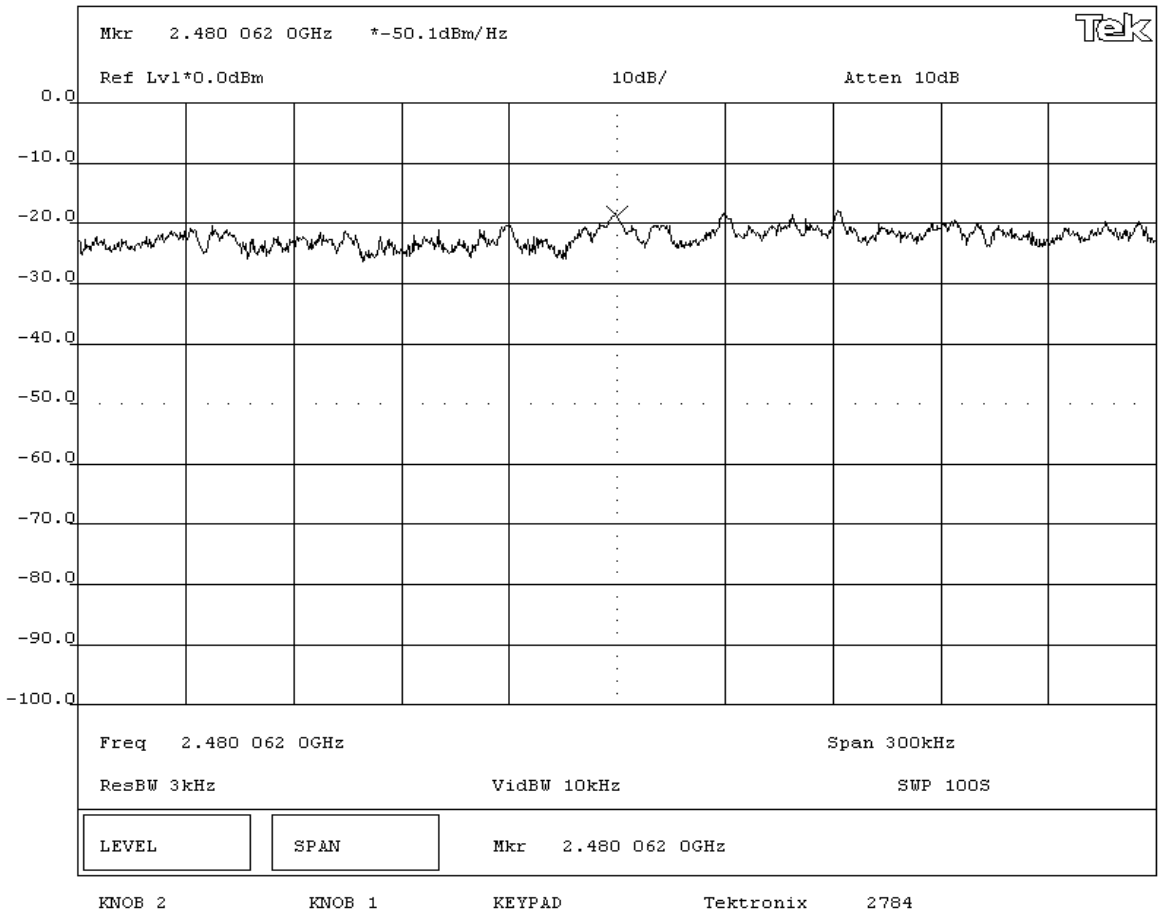
RESULTS	AMPLITUDE
Pass	Power Spectral Density = -15.3 dBm / 3kHz

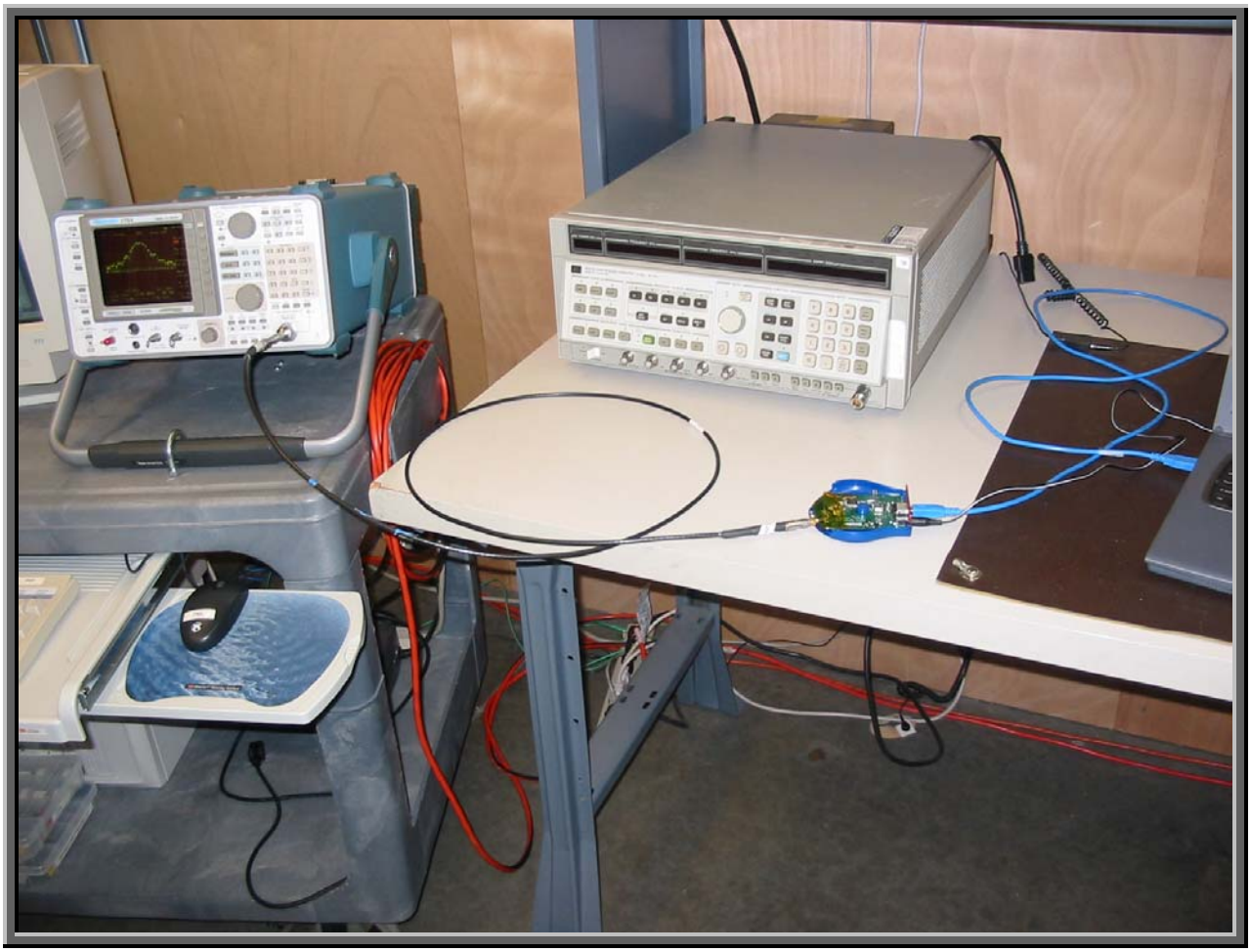
SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Power Spectral Density - High Channel





Justification

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

Channels in Specified Band Investigated:
Low
Mid
High

Operating Modes Investigated:
Transmit

Data Rates Investigated:
Maximum

Output Power Setting(s) Investigated:
Maximum

Power Input Settings Investigated:
120 VAC, 60 Hz.

Software\Firmware Applied During Test			
Exercise software	TestRFGen1	**Version**	Unknown
Description			
The system was tested using standard operating production software to exercise the functions of the device during the testing including mode, channel, and power.			

EUT and Peripherals			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AC Power Adapter	CUI, Inc.	41-9-500R	N/A
EUT- RF Host	Quizdom, Inc.	RF Host	Red

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop PC	Acer, Inc.	Travelmate 803 LCi	LXT 2506001326031C2EF01
AC Power Adapter	DELTA, Inc.	ADP-75FB B	S4W0326044192
Equipment isolated from the EUT so as not to contribute to the measurement result is considered to be outside the test setup boundary			

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Leads	No	1.8	PA	AC Power Adapter	EUT- RF Host
USB	Yes	4.0	No	EUT- RF Host	Laptop PC
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Measurement Equipment					
Description	**Manufacturer**	**Model**	**Identifier**	**Last Cal**	**Interval**
Antenna, Horn	EMCO	3160-09	AHG	NCR	NA
Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	10/08/2003	15 mo
Spectrum Analyzer	Tektronix	2784	AAO	01/02/2005	12 mo
Antenna, Horn	EMCO	3160-08	AHK	NCR	NA
Pre-Amplifier	Miteq	AMF-4D-005180-24-10P	APC	10/08/2003	15 mo
Antenna, Horn	EMCO	3115	AHC	09/07/2004	12 mo
Pre-Amplifier	Miteq	AMF-4D-005180-24-10P	APJ	01/05/2004	13 mo
Pre-Amplifier	AR	LN1000A	APS	02/05/2004	13 mo
Antenna, Biconilog	EMCO	3141	AXE	12/03/2003	24 mo
High Pass Filter	Micro-Tronics	HPM50111	HFO	04/13/2004	13 mo
Quasi-Peak Adapter	Hewlett-Packard	85650A	AQF	12/02/2004	13 mo
Spectrum Analyzer	Hewlett-Packard	8566B	AAL	12/02/2004	13 mo

Test Description

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

Configuration: The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band transmit frequencies. For each configuration, the spectrum was scanned throughout the specified range. In addition, measurements were made in the restricted bands to verify compliance. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and 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 C63.4:1992). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

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

Completed by:

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.1.3
EMI 2005.1.3

EUT:	RF Host	Work Order:	PROU0007
Serial Number:	Red	Date:	01/08/05
Customer:	Product Creation Studio	Temperature:	20
Attendees:	Scott Thielman	Humidity:	32%
Cust. Ref. No.:		Barometric Pressure	30.44
Tested by:	Holly Ashkannejhad	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS

Specification:	FCC 15.247(d) Spurious Radiated Emissions:2004	Method:	ANSI C63.4:2003

SAMPLE CALCULATIONS

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

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

COMMENTS

EUT OPERATING MODES

No hop, low channel

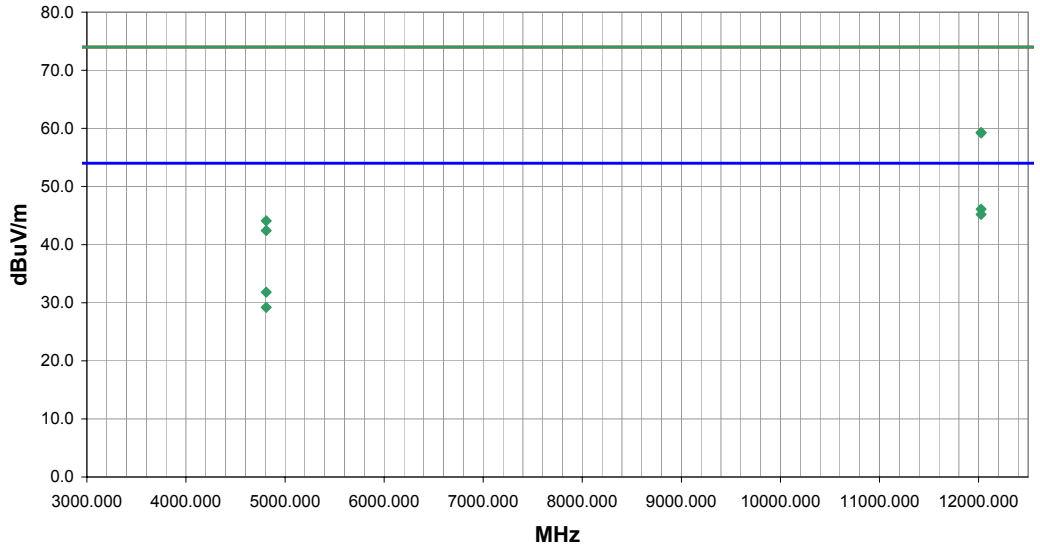
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Run #
Pass	2

Other

Tested By:



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
12025.000	26.0	20.1	295.0	1.2	3.0	0.0	V-Horn	AV	0.0	46.1	54.0	-7.9	EUT on side.
12025.000	25.1	20.1	227.0	2.3	3.0	0.0	H-Horn	AV	0.0	45.2	54.0	-8.8	EUT Horizontal
12025.000	39.2	20.1	295.0	1.2	3.0	0.0	V-Horn	PK	0.0	59.3	74.0	-14.7	EUT on side.
12025.000	39.1	20.1	227.0	2.3	3.0	0.0	H-Horn	PK	0.0	59.2	74.0	-14.8	EUT Horizontal
4809.954	28.5	3.3	354.0	1.3	3.0	0.0	V-Horn	AV	0.0	31.8	54.0	-22.2	EUT on side.
4809.954	25.9	3.3	154.0	1.3	3.0	0.0	H-Horn	AV	0.0	29.2	54.0	-24.8	EUT Horizontal
4809.954	40.8	3.3	354.0	1.3	3.0	0.0	V-Horn	PK	0.0	44.1	74.0	-29.9	EUT on side.
4809.954	39.1	3.3	154.0	1.3	3.0	0.0	H-Horn	PK	0.0	42.4	74.0	-31.6	EUT Horizontal

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.1.3
EMI 2005.1.3

EUT:	RF Host	Work Order:	PROU0007
Serial Number:	Red	Date:	01/08/05
Customer:	Product Creation Studio	Temperature:	20
Attendees:	Scott Thielman	Humidity:	32%
Cust. Ref. No.:		Barometric Pressure	30.44
Tested by:	Holly Ashkannejhad	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS

Specification:	FCC 15.247(d) Spurious Radiated Emissions:2004	Method:	ANSI C63.4:2003

SAMPLE CALCULATIONS

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

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

COMMENTS

EUT OPERATING MODES

No hop, high channel

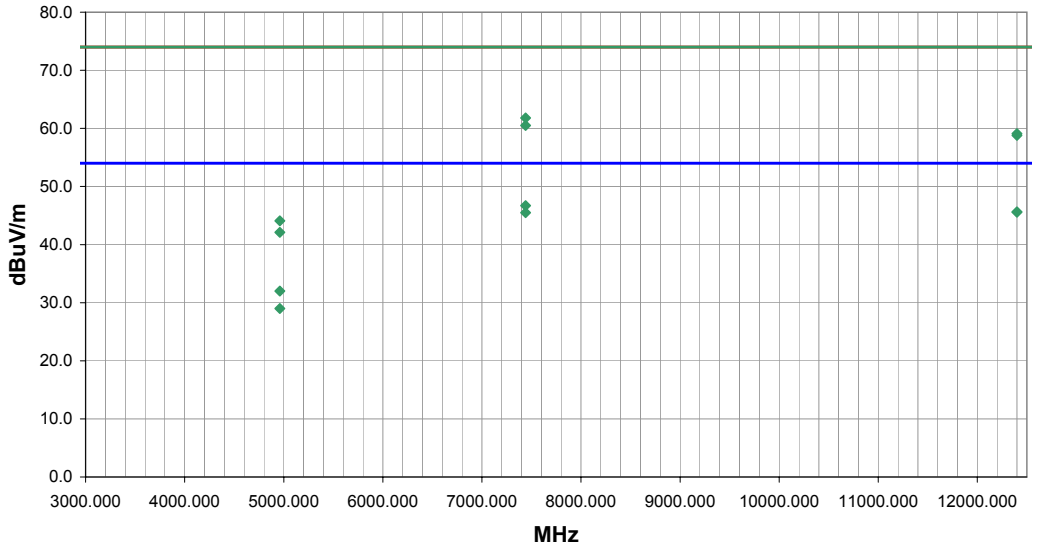
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Run #
Pass	4

Other

Tested By:



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
7440.119	35.6	11.1	241.0	2.2	3.0	0.0	H-Horn	AV	0.0	46.7	54.0	-7.3	EUT horizontal.
12400.000	24.8	20.8	153.0	1.3	3.0	0.0	H-Horn	AV	0.0	45.6	54.0	-8.4	EUT horizontal.
12400.000	24.8	20.8	274.0	1.1	3.0	0.0	V-Horn	AV	0.0	45.6	54.0	-8.4	EUT on side.
7440.119	34.4	11.1	119.0	1.3	3.0	0.0	V-Horn	AV	0.0	45.5	54.0	-8.5	EUT on side.
7440.119	50.7	11.1	241.0	2.2	3.0	0.0	H-Horn	PK	0.0	61.8	74.0	-12.2	EUT horizontal.
7440.119	49.4	11.1	119.0	1.3	3.0	0.0	V-Horn	PK	0.0	60.5	74.0	-13.5	EUT on side.
12400.000	38.3	20.8	153.0	1.3	3.0	0.0	H-Horn	PK	0.0	59.1	74.0	-14.9	EUT horizontal.
12400.000	38.0	20.8	274.0	1.1	3.0	0.0	V-Horn	PK	0.0	58.8	74.0	-15.2	EUT on side.
4959.985	28.4	3.6	283.0	1.3	3.0	0.0	V-Horn	AV	0.0	32.0	54.0	-22.0	EUT on side.
4959.985	25.4	3.6	26.0	1.3	3.0	0.0	H-Horn	AV	0.0	29.0	54.0	-25.0	EUT horizontal.
4959.985	40.5	3.6	283.0	1.3	3.0	0.0	V-Horn	PK	0.0	44.1	74.0	-29.9	EUT on side.
4959.985	38.5	3.6	26.0	1.3	3.0	0.0	H-Horn	PK	0.0	42.1	74.0	-31.9	EUT horizontal.

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.1.3
EMI 2005.1.3

EUT:	RF Host	Work Order:	PROU0007
Serial Number:	Red	Date:	01/08/05
Customer:	Product Creation Studio	Temperature:	20
Attendees:	Scott Thielman	Humidity:	32%
Cust. Ref. No.:		Barometric Pressure	30.44
Tested by:	Holly Ashkannejhad	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS

Specification:	FCC 15.247(d) Spurious Radiated Emissions:2004	Method:	ANSI C63.4:2003

SAMPLE CALCULATIONS

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

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

COMMENTS

EUT OPERATING MODES

No hop, mid channel

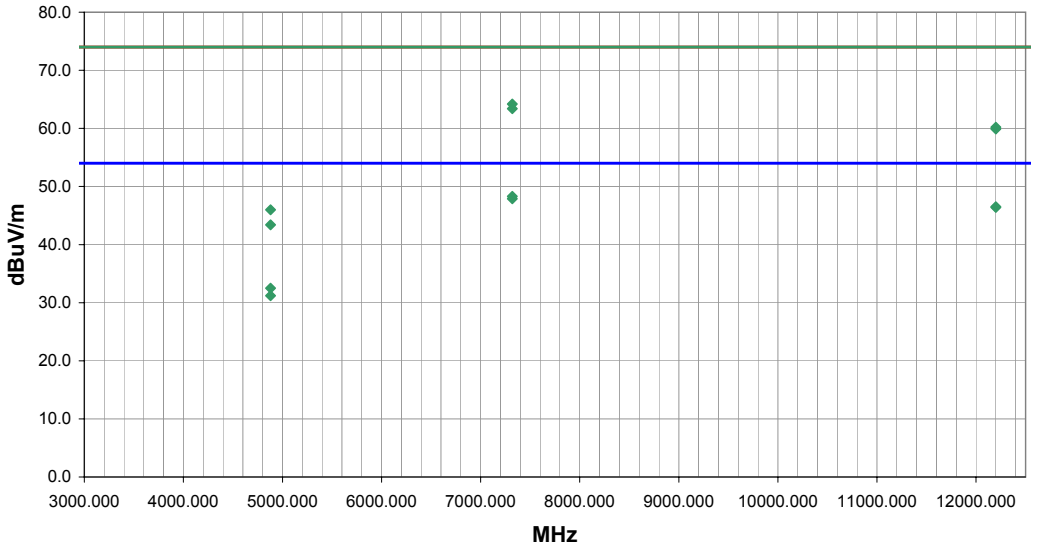
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Run #
Pass	3

Other

Tested By:



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
7320.002	37.8	10.5	272.0	1.8	3.0	0.0	H-Horn	AV	0.0	48.3	54.0	-5.7	EUT Horizontal.
7320.002	37.4	10.5	121.0	1.1	3.0	0.0	V-Horn	AV	0.0	47.9	54.0	-6.1	EUT on side.
12200.000	26.1	20.4	77.0	1.2	3.0	0.0	V-Horn	AV	0.0	46.5	54.0	-7.5	EUT on side.
12200.000	26.0	20.4	121.0	2.1	3.0	0.0	H-Horn	AV	0.0	46.4	54.0	-7.6	EUT Horizontal.
7320.002	53.7	10.5	272.0	1.8	3.0	0.0	H-Horn	PK	0.0	64.2	74.0	-9.8	EUT Horizontal.
7320.002	52.9	10.5	121.0	1.1	3.0	0.0	V-Horn	PK	0.0	63.4	74.0	-10.6	EUT on side.
12200.000	39.8	20.4	121.0	2.1	3.0	0.0	H-Horn	PK	0.0	60.2	74.0	-13.8	EUT Horizontal.
12200.000	39.5	20.4	77.0	1.2	3.0	0.0	V-Horn	PK	0.0	59.9	74.0	-14.1	EUT on side.
4880.079	28.9	3.6	347.0	1.1	3.0	0.0	V-Horn	AV	0.0	32.5	54.0	-21.5	EUT on side.
4880.079	27.6	3.6	2.0	1.2	3.0	0.0	H-Horn	AV	0.0	31.2	54.0	-22.8	EUT Horizontal.
4880.079	42.4	3.6	347.0	1.1	3.0	0.0	V-Horn	PK	0.0	46.0	74.0	-28.0	EUT on side.
4880.079	39.8	3.6	2.0	1.2	3.0	0.0	H-Horn	PK	0.0	43.4	74.0	-30.6	EUT Horizontal.

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

REV df4.6 12/14/2004

EUT:	RF Host	Work Order:	PROU0007
Serial Number:	Red	Date:	12/21/04
Customer:	Product Creation Studio	Temperature:	22
Attendees:	Scott Thielman	Humidity:	32%
Cust. Ref. No.:		Barometric Pressure	30.44
Tested by:	Rod Peloquin	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS

Specification:	FCC 15.247(d) Spurious Radiated Emissions:2004	Method:	ANSI C63.4:2003

SAMPLE CALCULATIONS

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

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

COMMENTS

EUT OPERATING MODES

No hop, high channel

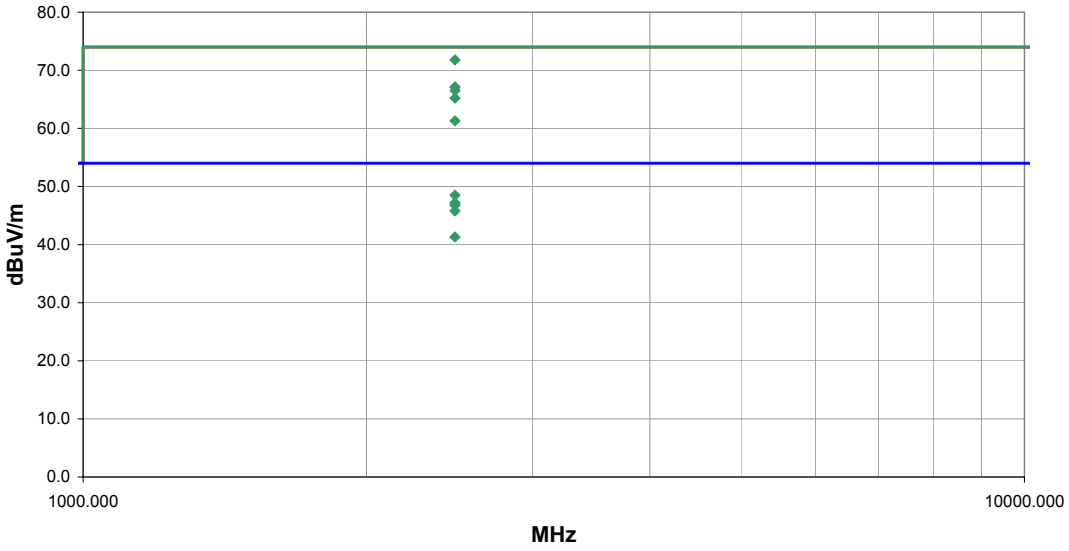
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Run #
Pass	1

Other

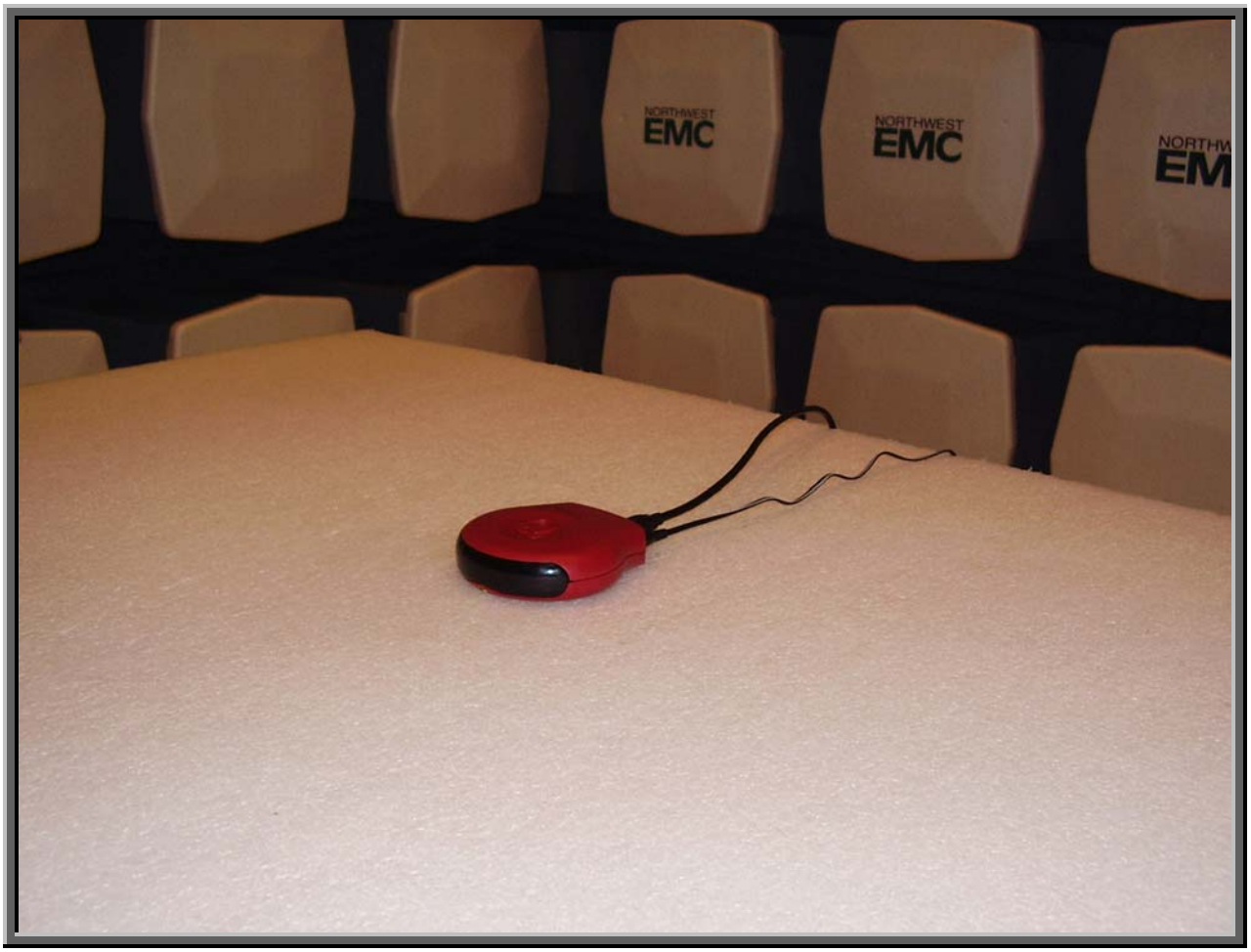
Tested By:



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
2483.550	64.0	-2.2	19.0	1.1	3.0	10.0	H-Horn	PK	0.0	71.8	74.0	-2.2	EUT horizontal
2483.500	40.7	-2.2	19.0	1.1	3.0	10.0	H-Horn	AV	0.0	48.5	54.0	-5.5	EUT horizontal
2483.500	39.4	-2.2	144.0	1.4	3.0	10.0	H-Horn	AV	0.0	47.2	54.0	-6.8	EUT vertical
2483.750	59.3	-2.2	144.0	1.4	3.0	10.0	H-Horn	PK	0.0	67.1	74.0	-6.9	EUT vertical
2483.750	59.3	-2.2	219.0	1.1	3.0	10.0	H-Horn	PK	0.0	67.1	74.0	-6.9	EUT on side
2483.500	39.2	-2.2	219.0	1.1	3.0	10.0	H-Horn	AV	0.0	47.0	54.0	-7.0	EUT on side
2483.500	39.0	-2.2	217.0	1.4	3.0	10.0	V-Horn	AV	0.0	46.8	54.0	-7.2	EUT on side
2484.250	58.7	-2.2	217.0	1.4	3.0	10.0	V-Horn	PK	0.0	66.5	74.0	-7.5	EUT on side
2483.500	38.0	-2.2	143.0	1.0	3.0	10.0	V-Horn	AV	0.0	45.8	54.0	-8.2	EUT vertical
2483.750	57.4	-2.2	143.0	1.0	3.0	10.0	V-Horn	PK	0.0	65.2	74.0	-8.8	EUT vertical
2483.500	33.5	-2.2	125.0	1.8	3.0	10.0	V-Horn	AV	0.0	41.3	54.0	-12.7	EUT horizontal
2483.550	53.5	-2.2	125.0	1.8	3.0	10.0	V-Horn	PK	0.0	61.3	74.0	-12.7	EUT horizontal


NORTHWEST
EMC


NORTHWEST
EMC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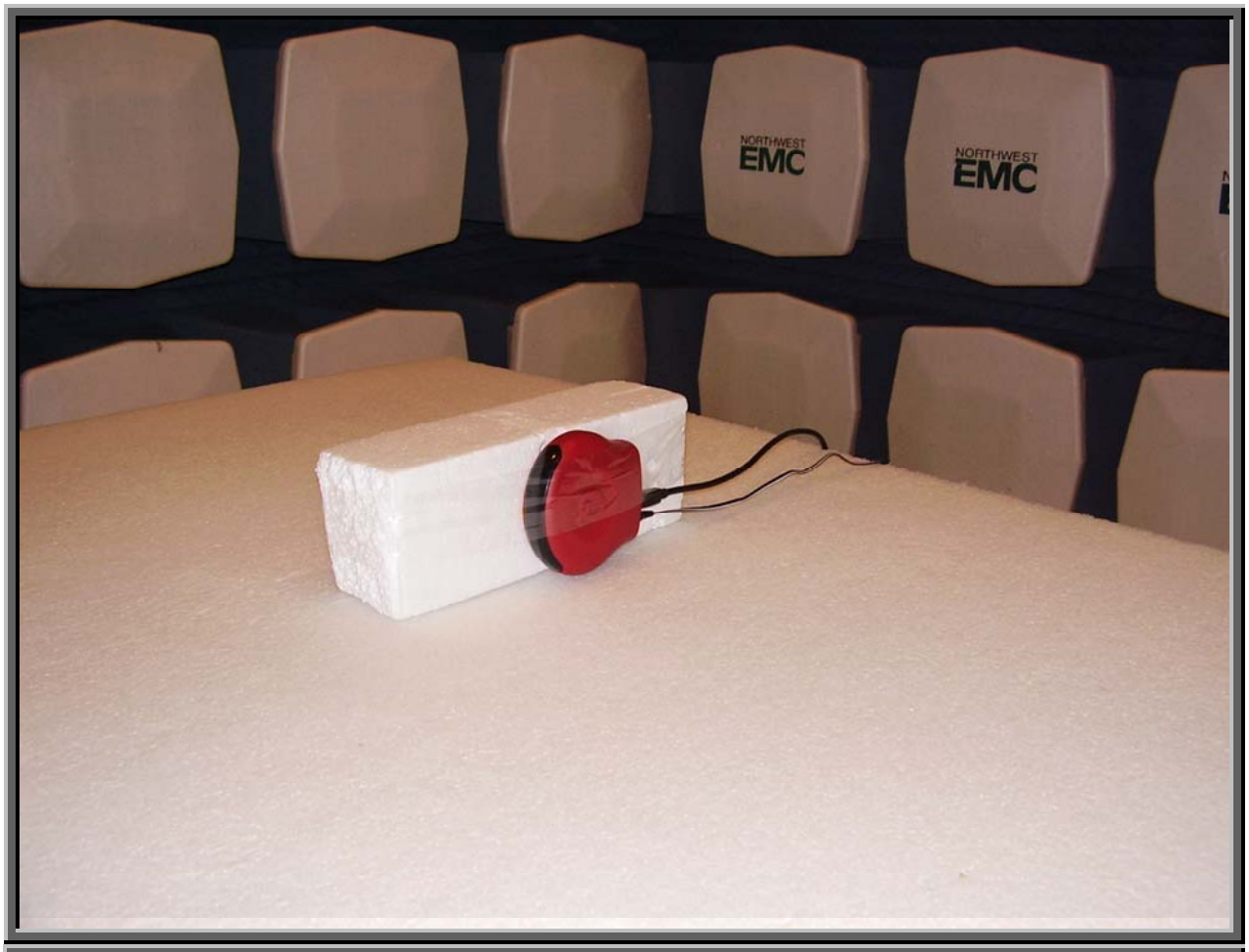
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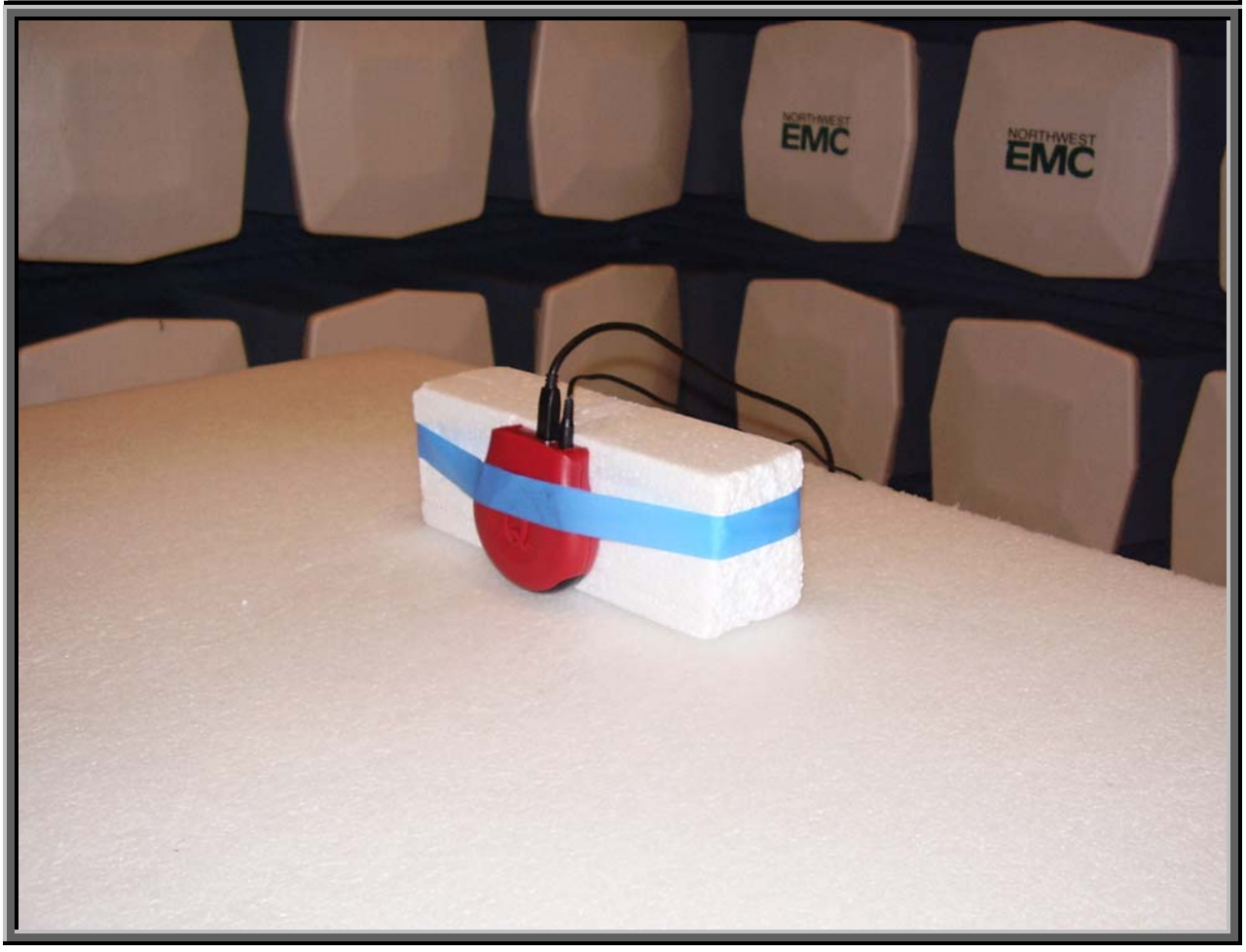
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Justification

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

Channels in Specified Band Investigated:
Low
Mid
High

Operating Modes Investigated:
Receive
Transmit

Data Rates Investigated:
Maximum

Output Power Setting(s) Investigated:
Maximum

Power Input Settings Investigated:
120 VAC, 60 Hz.

Software\Firmware Applied During Test			
Exercise software	TestRFGen1	**Version**	Unknown
Description			
The system was tested using standard operating production software to exercise the functions of the device during the testing including mode, channel, and power.			

EUT and Peripherals			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
EUT- RF Host	Quizdom, Inc.	RF Host	Red
AC Power Adapter	CUI, Inc.	41-9-500R	N/A

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop PC	Acer, Inc.	Travelmate 803 LCi	LXT 2506001326031C2EF01
AC Power Adapter	DELTA, Inc.	ADP-75FB B	S4W0326044192
Equipment isolated from the EUT so as not to contribute to the measurement result is considered to be outside the test setup boundary			

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
USB	Yes	2.0		EUT- RF Host	Laptop PC
DC Leads	No	1.8	PA	AC Power Adapter	EUT- RF Host
DC Leads	PA	2.0	Yes	Laptop PC	AC Power Adapter
AC Power	No	2.0	No	AC Power Adapter	AC Mains
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

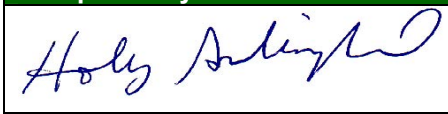
Measurement Equipment					
Description	**Manufacturer**	**Model**	**Identifier**	**Last Cal**	**Interval**
Attenuator	Tektronix	011-0059-02	ATH	12/29/2004	13 mo
High Pass Filter	TTE	H97-100k-50-720B	HFC	12/29/2004	13 mo
LISN	Solar	9252-50-R-24-BNC	LIO	04/30/2004	12 mo
LISN	Solar	9252-50-R-24-BNC	LIN	12/29/2004	13 mo
Quasi-Peak Adapter	Hewlett-Packard	85650A	AQF	12/02/2004	13 mo
Spectrum Analyzer	Hewlett-Packard	8566B	AAL	12/02/2004	13 mo
Spectrum Analyzer Display	Hewlett Packard	85662A	AALD	12/02/2004	13 mo

Test Description

Requirement: Per 47 15.207(d), if the EUT is connected to the AC power line indirectly, obtaining its power from another device that is connected to the AC power line, then it should be tested to demonstrate compliance with the conducted limits of 15.207.

Configuration: The EUT will be powered from a device that could be connected to the AC power line. Therefore, the measurements were made on the device used to power the EUT. The AC power line conducted emissions were measured with the EUT operating at the lowest, the highest, and a middle channel in the operational band. The EUT was transmitting at its maximum data rate. For each mode, the spectrum was scanned from 150 kHz to 30 MHz. The test setup and procedures were in accordance with ANSI C63.4-1992.

Completed by:



EMC CONDUCTED EMISSIONS DATA SHEET

ACQ 2005.1.3
EMI A2.13

EUT:	RF Host	Work Order:	PROU0007
Serial Number:	Red	Date:	01/03/05
Customer:	Product Creation Studio	Temperature:	22
Attendees:	None	Humidity:	30%
Cust. Ref. No.:		Barometric Pressure	30.09
Tested by:	Holly Ashkannejhad	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS

Specification:	FCC 15.207 AC Powerline Conducted Emissions:2004	Method:	ANSI C63.4:2003

SAMPLE CALCULATIONS

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

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

COMMENTS

EUT OPERATING MODES

Transmitting low channel

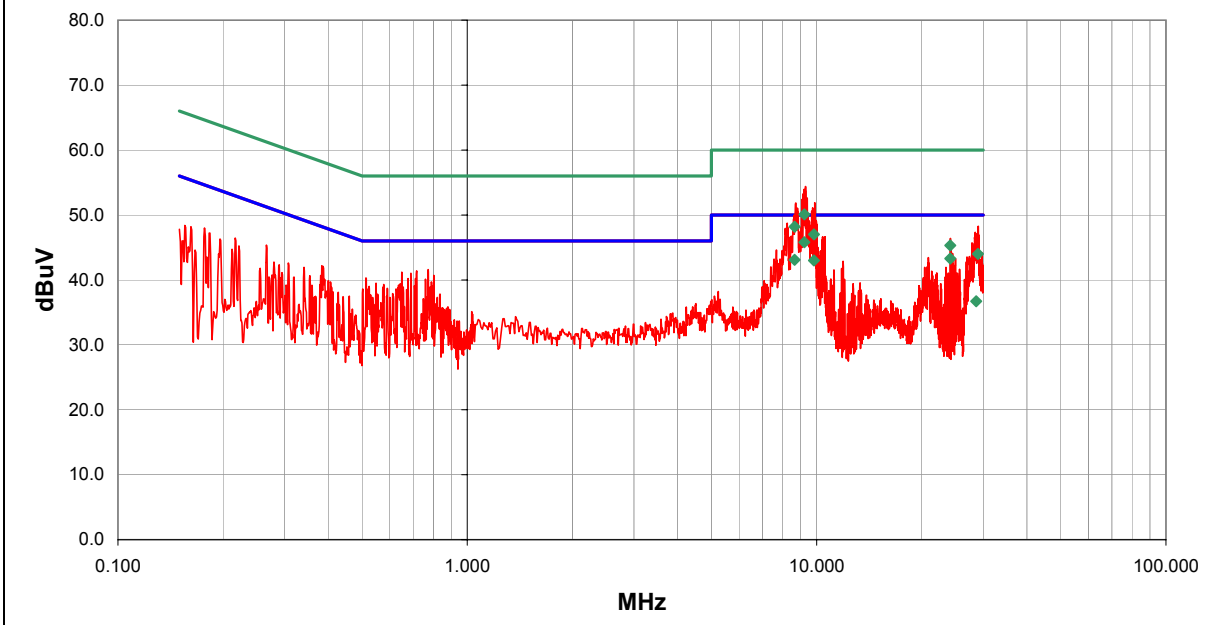
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Line	Run #
Pass	N	1

Other

Tested By:



Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
9.225	24.9			0.0	0.9	20.0		AV		45.8	50.0	-4.2
24.121	21.8			0.0	1.5	20.0		AV		43.3	50.0	-6.7
8.652	22.3			0.0	0.8	20.0		AV		43.1	50.0	-6.9
9.823	22.1			0.0	0.9	20.0		AV		43.0	50.0	-7.0
9.225	29.2			0.0	0.9	20.0		QP		50.1	60.0	-9.9
8.652	27.4			0.0	0.8	20.0		QP		48.2	60.0	-11.8
9.823	26.1			0.0	0.9	20.0		QP		47.0	60.0	-13.0
28.624	15.1			0.0	1.6	20.0		AV		36.7	50.0	-13.3
24.121	23.8			0.0	1.5	20.0		QP		45.3	60.0	-14.7
28.968	22.4			0.0	1.6	20.0		QP		44.0	60.0	-16.0
8.619	29.1			0.0	0.8	20.0				49.9	50.0	-0.1
9.840	29.0			0.0	0.9	20.0				49.9	50.0	-0.1
9.759	29.0			0.0	0.9	20.0				49.9	50.0	-0.1
9.749	28.9			0.0	0.9	20.0				49.8	50.0	-0.2
9.792	28.8			0.0	0.9	20.0				49.7	50.0	-0.3
9.060	28.8			0.0	0.9	20.0				49.7	50.0	-0.3
9.439	28.7			0.0	0.9	20.0				49.6	50.0	-0.4
9.429	28.7			0.0	0.9	20.0				49.6	50.0	-0.4
9.936	28.3			0.0	0.9	20.0				49.2	50.0	-0.8

NORTHWEST EMC

CONDUCTED EMISSIONS DATA SHEET

ACQ 2005.1.3
EMI A2.13

EUT:	RF Host	Work Order:	PROU0007
Serial Number:	Red	Date:	01/03/05
Customer:	Product Creation Studio	Temperature:	22
Attendees:	None	Humidity:	30%
Cust. Ref. No.:		Barometric Pressure	30.09
Tested by:	Holly Ashkannejhad	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS

Specification:	FCC 15.207 AC Powerline Conducted Emissions:2004	Method:	ANSI C63.4:2003

SAMPLE CALCULATIONS

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

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

COMMENTS

EUT OPERATING MODES

Transmitting low channel

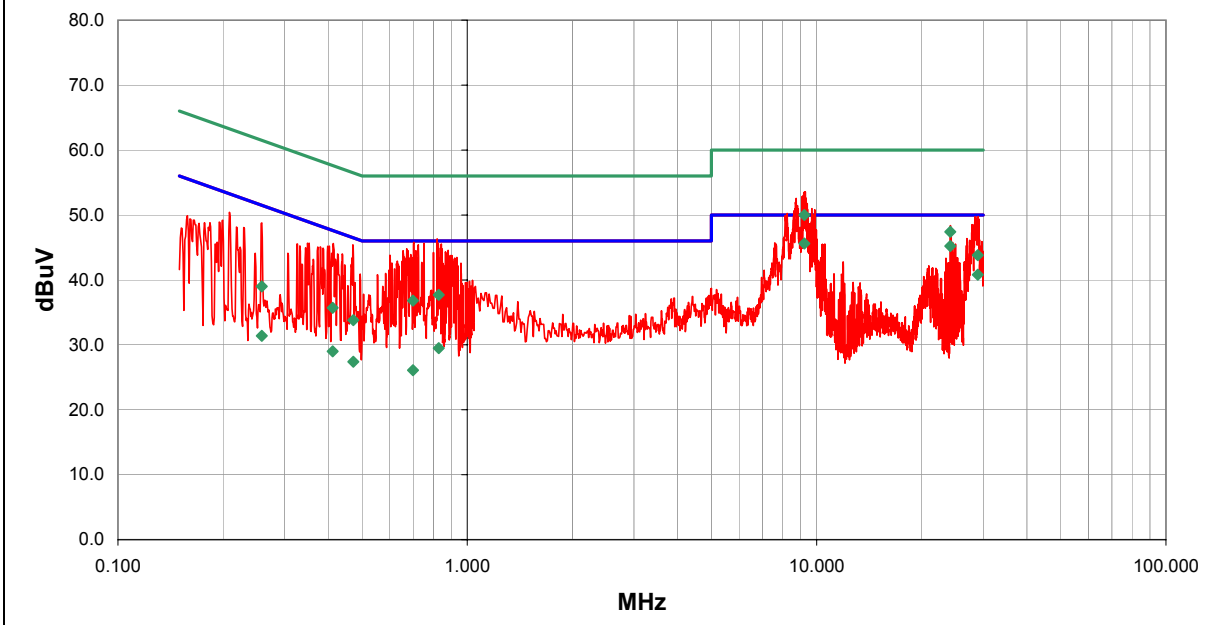
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Line	Run #
Pass	L1	2

Other

Tested By:



Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
9.224	24.7			0.0	0.9	20.0		AV		45.6	50.0	-4.4
24.120	23.7			0.0	1.5	20.0		AV		45.2	50.0	-4.8
28.946	19.2			0.0	1.6	20.0		AV		40.8	50.0	-9.2
9.224	29.1			0.0	0.9	20.0		QP		50.0	60.0	-10.0
24.120	25.9			0.0	1.5	20.0		QP		47.4	60.0	-12.6
28.946	22.2			0.0	1.6	20.0		QP		43.8	60.0	-16.2
0.829	9.5			0.0	0.0	20.0		AV		29.5	46.0	-16.5
0.829	17.7			0.0	0.0	20.0		QP		37.7	56.0	-18.3
0.412	9.0			0.0	0.0	20.0		AV		29.0	47.6	-18.6
0.472	7.4			0.0	0.0	20.0		AV		27.4	46.5	-19.1
0.699	16.8			0.0	0.0	20.0		QP		36.8	56.0	-19.2
0.699	6.1			0.0	0.0	20.0		AV		26.1	46.0	-19.9
0.258	11.4			0.0	0.0	20.0		AV		31.4	51.5	-20.1
0.412	15.7			0.0	0.0	20.0		QP		35.7	57.6	-21.9
0.258	19.0			0.0	0.0	20.0		QP		39.0	61.5	-22.5
0.472	13.8			0.0	0.0	20.0		QP		33.8	56.5	-22.7
9.840	29.1			0.0	0.9	20.0				50.0	50.0	0.0
9.828	29.1			0.0	0.9	20.0				50.0	50.0	0.0
8.139	29.1			0.0	0.8	20.0				49.9	50.0	-0.1

NORTHWEST EMC

CONDUCTED EMISSIONS DATA SHEET

ACQ 2005.1.3
EMI A2.13

EUT:	RF Host	Work Order:	PROU0007
Serial Number:	Red	Date:	01/03/05
Customer:	Product Creation Studio	Temperature:	22
Attendees:	None	Humidity:	30%
Cust. Ref. No.:		Barometric Pressure	30.09
Tested by:	Holly Ashkannejhad	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS

Specification:	FCC 15.207 AC Powerline Conducted Emissions:2004	Method:	ANSI C63.4:2003

SAMPLE CALCULATIONS

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

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

COMMENTS

EUT OPERATING MODES

Transmitting mid channel

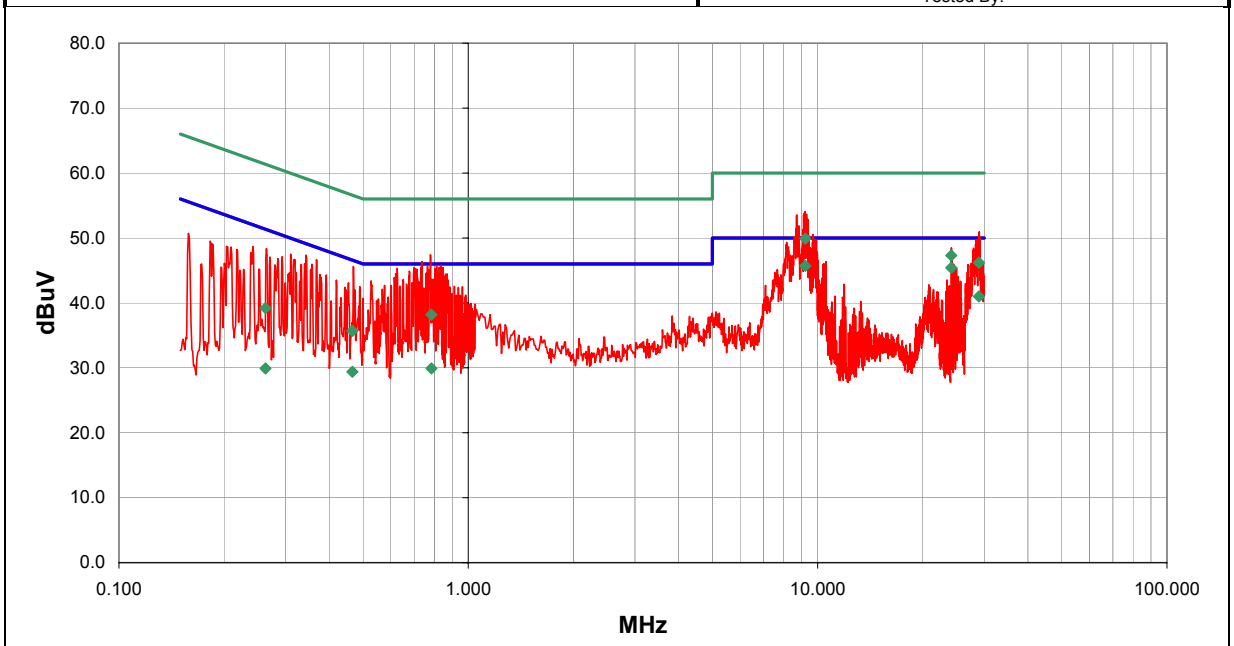
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Line	Run #
Pass	L1	3

Other

Tested By:



Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
9.224	24.8			0.0	0.9	20.0		AV		45.7	50.0	-4.3
24.120	23.9			0.0	1.5	20.0		AV		45.4	50.0	-4.6
28.962	19.4			0.0	1.6	20.0		AV		41.0	50.0	-9.0
9.224	29.0			0.0	0.9	20.0		QP		49.9	60.0	-10.1
24.120	25.8			0.0	1.5	20.0		QP		47.3	60.0	-12.7
28.962	24.6			0.0	1.6	20.0		QP		46.2	60.0	-13.8
0.784	9.9			0.0	0.0	20.0		AV		29.9	46.0	-16.1
0.466	9.4			0.0	0.0	20.0		AV		29.4	46.6	-17.2
0.784	18.2			0.0	0.0	20.0		QP		38.2	56.0	-17.8
0.466	15.7			0.0	0.0	20.0		QP		35.7	56.6	-20.9
0.263	9.9			0.0	0.0	20.0		AV		29.9	51.3	-21.4
0.263	19.2			0.0	0.0	20.0		QP		39.2	61.3	-22.1
9.439	29.1			0.0	0.9	20.0				50.0	50.0	0.0
9.429	29.1			0.0	0.9	20.0				50.0	50.0	0.0
0.837	25.6			0.0	0.2	20.0				45.8	46.0	-0.2
0.811	25.6			0.0	0.2	20.0				45.8	46.0	-0.2
9.840	28.9			0.0	0.9	20.0				49.8	50.0	-0.2
9.828	28.9			0.0	0.9	20.0				49.8	50.0	-0.2
9.720	28.9			0.0	0.9	20.0				49.8	50.0	-0.2

NORTHWEST EMC

CONDUCTED EMISSIONS DATA SHEET

ACQ 2005.1.3
EMI A2.13

EUT:	RF Host	Work Order:	PROU0007
Serial Number:	Red	Date:	01/03/05
Customer:	Product Creation Studio	Temperature:	22
Attendees:	None	Humidity:	30%
Cust. Ref. No.:		Barometric Pressure	30.09
Tested by:	Holly Ashkannejhad	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS

Specification:	FCC 15.207 AC Powerline Conducted Emissions:2004	Method:	ANSI C63.4:2003

SAMPLE CALCULATIONS

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

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

COMMENTS

EUT OPERATING MODES

Transmitting mid channel

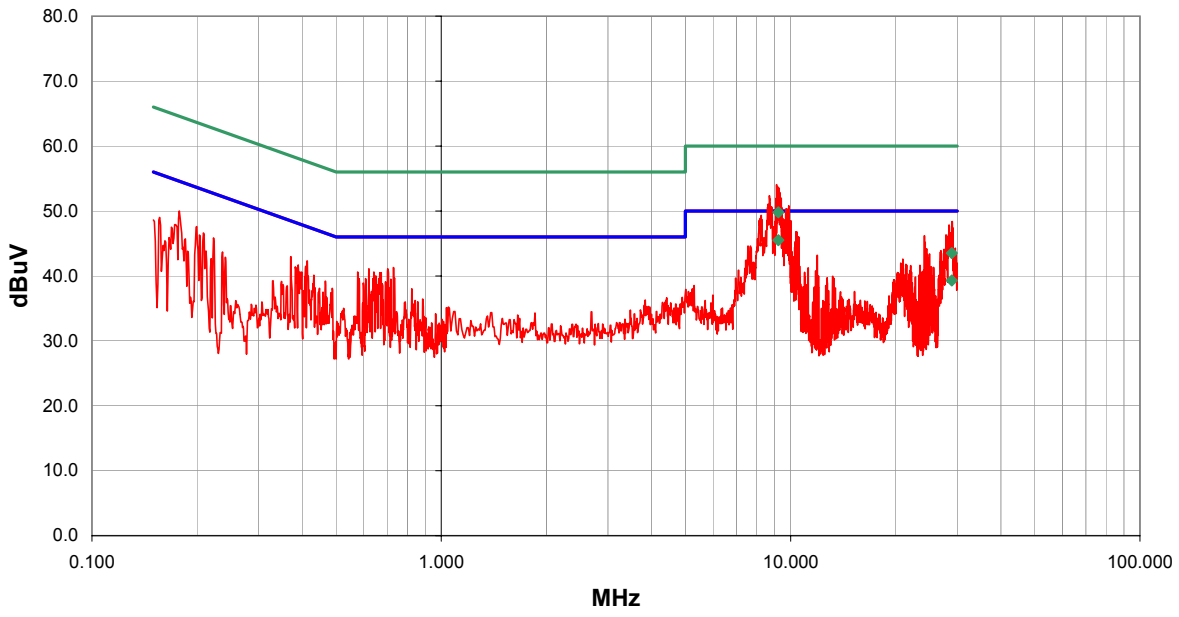
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Line	Run #
Pass	N	4

Other

Tested By:



Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
9.222	24.6			0.0	0.9	20.0		AV		45.5	50.0	-4.5
9.222	28.9			0.0	0.9	20.0		QP		49.8	60.0	-10.2
28.920	17.7			0.0	1.6	20.0		AV		39.3	50.0	-10.7
28.920	21.9			0.0	1.6	20.0		QP		43.5	60.0	-16.5
9.720	29.1			0.0	0.9	20.0				50.0	50.0	0.0
9.708	29.1			0.0	0.9	20.0				50.0	50.0	0.0
9.828	29.0			0.0	0.9	20.0				49.9	50.0	-0.1
9.840	28.9			0.0	0.9	20.0				49.8	50.0	-0.2
9.792	28.9			0.0	0.9	20.0				49.8	50.0	-0.2
9.739	28.9			0.0	0.9	20.0				49.8	50.0	-0.2
9.684	28.9			0.0	0.9	20.0				49.8	50.0	-0.2
9.899	28.8			0.0	0.9	20.0				49.7	50.0	-0.3
9.869	28.7			0.0	0.9	20.0				49.6	50.0	-0.4
9.859	28.6			0.0	0.9	20.0				49.5	50.0	-0.5
8.239	28.5			0.0	0.8	20.0				49.3	50.0	-0.7
9.456	28.1			0.0	0.9	20.0				49.0	50.0	-1.0
9.480	28.0			0.0	0.9	20.0				48.9	50.0	-1.1
9.468	28.0			0.0	0.9	20.0				48.9	50.0	-1.1
8.179	28.0			0.0	0.8	20.0				48.8	50.0	-1.2

NORTHWEST EMC

CONDUCTED EMISSIONS DATA SHEET

ACQ 2005.1.3
EMI A2.13

EUT:	RF Host	Work Order:	PROU0007
Serial Number:	Red	Date:	01/03/05
Customer:	Product Creation Studio	Temperature:	22
Attendees:	None	Humidity:	30%
Cust. Ref. No.:		Barometric Pressure	30.09
Tested by:	Holly Ashkannejhad	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS

Specification:	FCC 15.207 AC Powerline Conducted Emissions:2004	Method:	ANSI C63.4:2003

SAMPLE CALCULATIONS

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

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

COMMENTS

EUT OPERATING MODES

Transmitting high channel

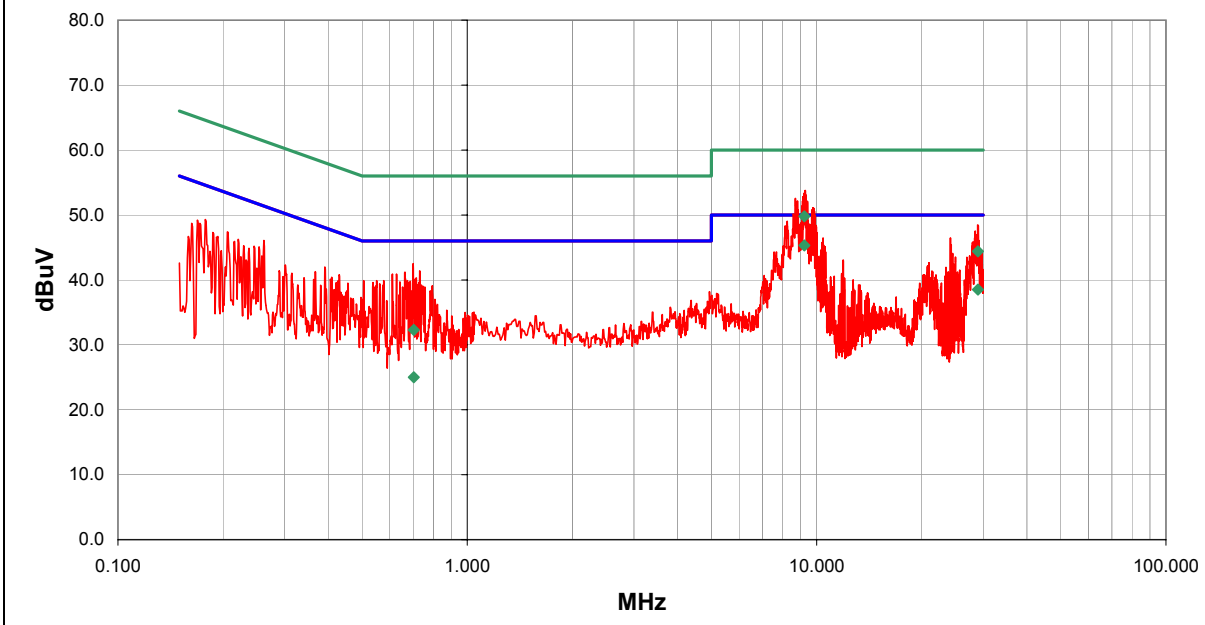
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Line	Run #
Pass	N	5

Other

Tested By:



Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
9.226	24.4			0.0	0.9	20.0		AV		45.3	50.0	-4.7
9.226	28.9			0.0	0.9	20.0		QP		49.8	60.0	-10.2
28.965	16.9			0.0	1.6	20.0		AV		38.5	50.0	-11.5
28.965	22.8			0.0	1.6	20.0		QP		44.4	60.0	-15.6
0.703	5.0			0.0	0.0	20.0		AV		25.0	46.0	-21.0
0.703	12.3			0.0	0.0	20.0		QP		32.3	56.0	-23.7
9.879	29.0			0.0	0.9	20.0				49.9	50.0	-0.1
9.720	28.8			0.0	0.9	20.0				49.7	50.0	-0.3
9.708	28.8			0.0	0.9	20.0				49.7	50.0	-0.3
9.684	28.8			0.0	0.9	20.0				49.7	50.0	-0.3
9.792	28.7			0.0	0.9	20.0				49.6	50.0	-0.4
9.779	28.5			0.0	0.9	20.0				49.4	50.0	-0.6
9.899	28.4			0.0	0.9	20.0				49.3	50.0	-0.7
9.439	28.2			0.0	0.9	20.0				49.1	50.0	-0.9
8.239	28.2			0.0	0.8	20.0				49.0	50.0	-1.0
9.869	28.0			0.0	0.9	20.0				48.9	50.0	-1.1
9.000	27.9			0.0	0.9	20.0				48.8	50.0	-1.2
9.552	27.7			0.0	0.9	20.0				48.6	50.0	-1.4
9.912	27.6			0.0	0.9	20.0				48.5	50.0	-1.5

NORTHWEST EMC

CONDUCTED EMISSIONS DATA SHEET

ACQ 2005.1.3
EMI A2.13

EUT:	RF Host	Work Order:	PROU0007
Serial Number:	Red	Date:	01/03/05
Customer:	Product Creation Studio	Temperature:	22
Attendees:	None	Humidity:	30%
Cust. Ref. No.:		Barometric Pressure	30.09
Tested by:	Holly Ashkannejhad	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS

Specification:	FCC 15.207 AC Powerline Conducted Emissions:2004	Method:	ANSI C63.4:2003

SAMPLE CALCULATIONS

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

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

COMMENTS

EUT OPERATING MODES

Transmitting high channel

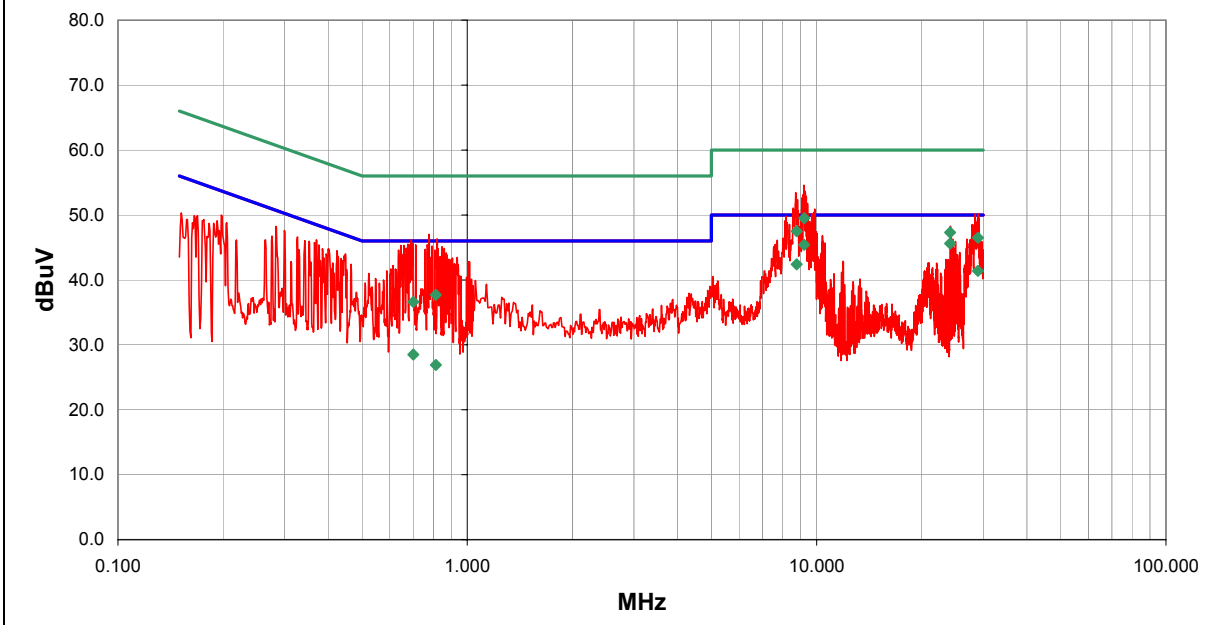
DEVIATIONS FROM TEST STANDARD

No deviations.

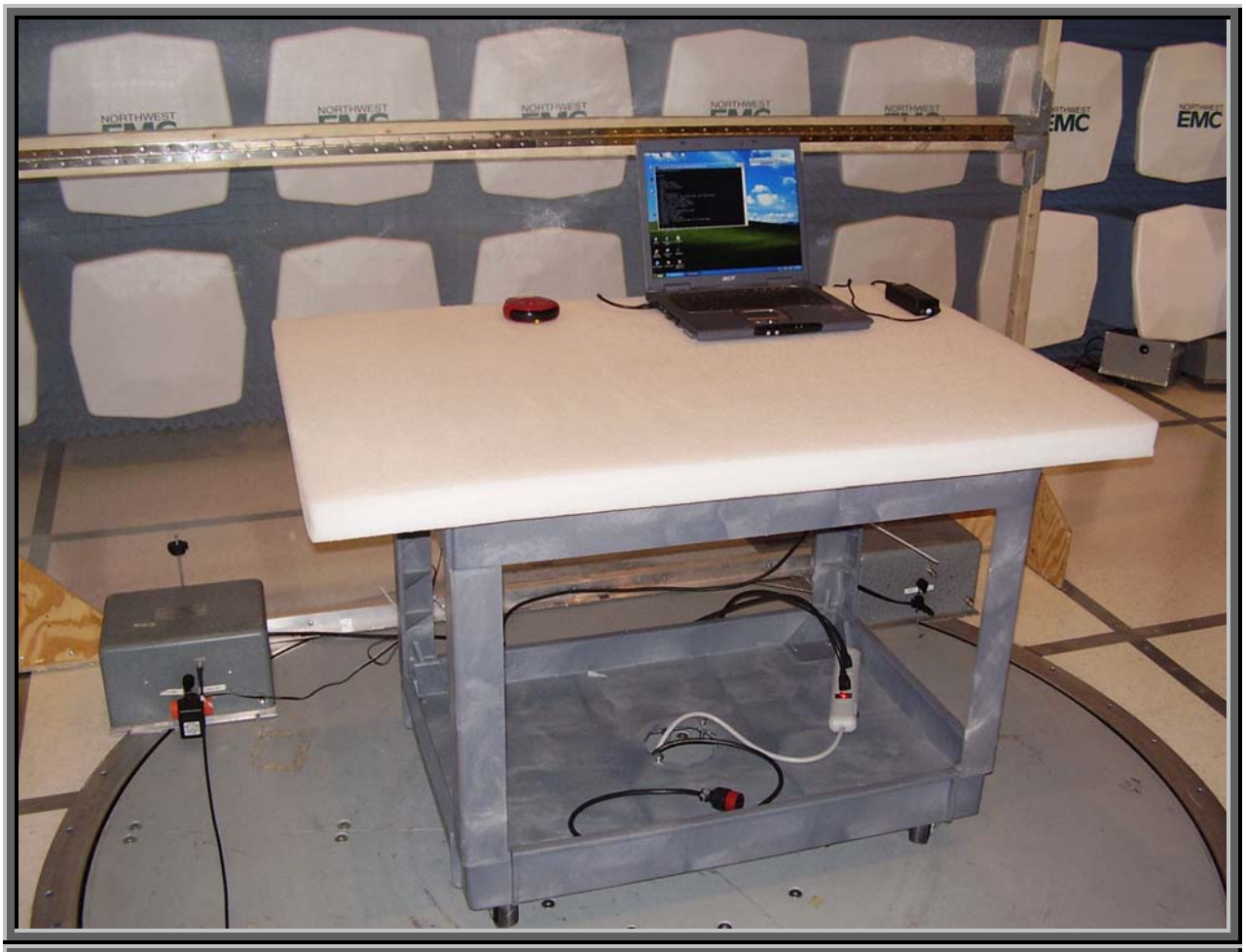
RESULTS	Line	Run #
Pass	L1	6

Other

Tested By:



Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
24.118	24.1			0.0	1.5	20.0		AV		45.6	50.0	-4.4
9.216	24.5			0.0	0.9	20.0		AV		45.4	50.0	-4.6
8.767	21.5			0.0	0.9	20.0		AV		42.4	50.0	-7.6
28.965	19.8			0.0	1.6	20.0		AV		41.4	50.0	-8.6
9.216	28.6			0.0	0.9	20.0		QP		49.5	60.0	-10.5
8.767	26.6			0.0	0.9	20.0		QP		47.5	60.0	-12.5
24.118	25.8			0.0	1.5	20.0		QP		47.3	60.0	-12.7
28.965	24.9			0.0	1.6	20.0		QP		46.5	60.0	-13.5
0.701	8.5			0.0	0.0	20.0		AV		28.5	46.0	-17.5
0.813	17.7			0.0	0.0	20.0		QP		37.7	56.0	-18.3
0.813	6.9			0.0	0.0	20.0		AV		26.9	46.0	-19.1
0.701	16.6			0.0	0.0	20.0		QP		36.6	56.0	-19.4
9.439	29.1			0.0	0.9	20.0				50.0	50.0	0.0
9.429	29.1			0.0	0.9	20.0				50.0	50.0	0.0
8.179	29.0			0.0	0.8	20.0				49.8	50.0	-0.2
9.859	28.8			0.0	0.9	20.0				49.7	50.0	-0.3
9.816	28.8			0.0	0.9	20.0				49.7	50.0	-0.3
9.804	28.8			0.0	0.9	20.0				49.7	50.0	-0.3
9.759	28.8			0.0	0.9	20.0				49.7	50.0	-0.3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