

NORTHWEST EMC

WatchGuard Technologies, Inc.

Firebox T30-W (BS3AE5W)

Firebox T50-W (BS5AE7W)

FCC 15.207:2015

FCC 15.407:2015

802.11 an, ac Radio

Report # VDEI0009.3



NVLAP Lab Code: 201049-0

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CERTIFICATE OF TEST



Last Date of Test: October 27, 2015
WatchGuard Technologies, Inc.
Model: Firebox T30-W (BS3AE5W)
Firebox T50-W (BS5AE7W)

Radio Equipment Testing

Standards

Specification	Method
FCC 15.207:2015	ANSI C63.10:2013
FCC 15.407:2015	ANSI C63.10:2013

Results

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions	Yes	Pass	
6.5, 6.6, 12.7	Spurious Radiated Emissions	Yes	Pass	
6.8	Frequency Stability	Yes	Pass	
12.2	Duty Cycle	Yes	Pass	
12.3	Maximum Conducted Output Power	Yes	Pass	
12.4.1	Emission Bandwidth	Yes	Pass	
12.4.2	Occupied Bandwidth	Yes	Pass	
12.5	Maximum Power Spectral Density	Yes	Pass	

Deviations From Test Standards

None

Approved By:

Jeremiah Darden, Operations Manager

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. 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. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information.

REVISION HISTORY

Revision Number	Description	Date	Page Number
00	None		

ACCREDITATIONS AND AUTHORIZATIONS

United States

FCC - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

A2LA - Accredited by A2LA to ISO / IEC 17065 as a product certifier. This allows Northwest EMC to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

IC - Recognized by Industry Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with IC.

European Union

European Commission – Validated by the European Commission as a Conformity Assessment Body (CAB) under the EMC directive and as a Notified Body under the R&TTE Directive.

Australia/New Zealand

ACMA - Recognized by ACMA as a CAB for the acceptance of test data.

Korea

MSIP / RRA - Recognized by KCC's RRA as a CAB for the acceptance of test data.

Japan

VCCI - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

Taiwan

BSMI – Recognized by BSMI as a CAB for the acceptance of test data.

NCC - Recognized by NCC as a CAB for the acceptance of test data.

Singapore

IDA – Recognized by IDA as a CAB for the acceptance of test data.

Israel

MOC – Recognized by MOC as a CAB for the acceptance of test data.

Hong Kong

OFCA – Recognized by OFCA as a CAB for the acceptance of test data.

Vietnam

MIC – Recognized by MIC as a CAB for the acceptance of test data.

SCOPE

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

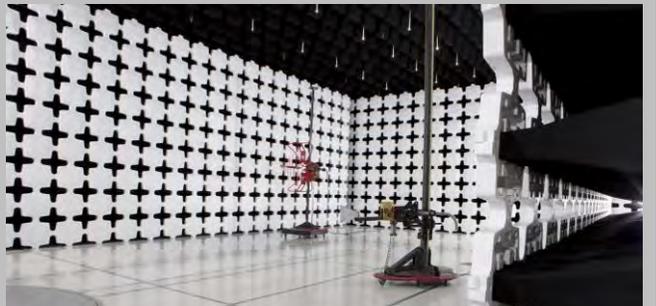
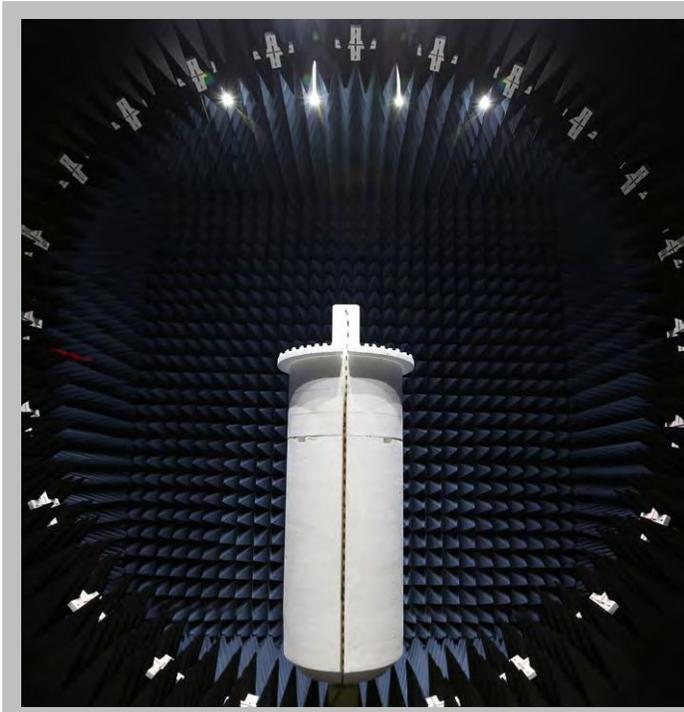
<http://www.nwemc.com/accreditations/>

<http://gsi.nist.gov/global/docs/cabs/designations.html>

FACILITIES



California Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918	Minnesota Labs MN01-08, MN10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	New York Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 554-8214	Oregon Labs EV01-12 22975 NW Evergreen Pkwy Hillsboro, OR 97124 (503) 844-4066	Texas Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Washington Labs NC01-05 19201 120 th Ave NE Bothell, WA 9801 (425)984-6600
NVLAP					
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200761-0	NVLAP Lab Code: 200630-0	NVLAP Lab Code:201049-0	NVLAP Lab Code: 200629-0
Industry Canada					
2834B-1, 2834B-3	2834E-1	N/A	2834D-1, 2834D-2	2834G-1	2834F-1
BSMI					
SL2-IN-E-1154R	SL2-IN-E-1152R	N/A	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI					
A-0029	A-0109	N/A	A-0108	A-0201	A-0110
Recognized Phase I CAB for ACMA, BSMI, IDA, KCC/RRR, MIC, MOC, NCC, OFCA					
US0158	US0175	N/A	US0017	US0191	US0157



MEASUREMENT UNCERTAINTY

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. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

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 (K=2) for each test is on each data sheet. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-2 as applicable), and are available upon request.

The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

Test	+ MU	- MU
Frequency Accuracy (Hz)	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	0.3 dB	-0.3 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	4.9 dB	-4.9 dB
AC Powerline Conducted Emissions (dB)	2.4 dB	-2.4 dB

PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Customer:	WatchGuard Technologies, Inc.
Address:	505 Fifth Avenue South Suite 500
City, State, Zip:	Seattle, WA 98104 United States
Test Requested By:	Brian Hudson
Model:	Firebox T30-W (BS3AE5W) Firebox T50-W (BS5AE7W)
Manufacturer:	Sercomm Corporation
First Date of Test:	July 31, 2015
Last Date of Test:	October 27, 2015
Receipt Date of Samples:	July 27, 2015
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT:

The device is a wireless 802.11a/b/g/n/ac Access Point, which operates in 2.4GHz or 5Ghz band. It supports 20/40MHz channel on 2.4G, 20/40/80MHz channel on 5G and 256 QAM to maximize bandwidth efficiency. The single band WIFI module supports 3Tx/3Rx MIMO to enables antenna port data rate up to 1.3Gbps, while nearly tripling wireless performance of 802.11n 3x3. Three UFL antenna connectors enable design flexibility to utilize different transmit/receive chains to communicate with different users.

Statement of Similarity:

The model Firebox T30-W (BS3AE5W) and model Firebox T50-W (BS5AE7W) are wireless access points / hardware firewalls. Both use the same enclosure, power supply, and system / radio board; but the T30 has the digital portion slightly depopulated. The T30-W has 5 ethernet ports while the T50-W has 7.

Testing Objective:

To demonstrate compliance of the 802.11 an, ac radio under FCC 15.407 for operation in the 5.2 GHz and 5.8 GHz band(s).

RF Power Table – FCC 15.407

20 MHz Bandwidth Channels:

	5180 MHz	5240 MHz	5745 MHz	5785 MHz	5825 MHz
6 Mbps	19.0	19.0	19.0	19.0	19.0
36 Mbps	19.0	19.0	19.0	19.0	19.0
54 Mbps	18.0	18.0	18.0	18.0	18.0
MCS0	19.0	19.0	19.0	19.0	19.0
MCS7	17.0	17.0	17.0	17.0	17.0
MCS8	19.0	19.0	19.0	19.0	19.0
MCS15	17.0	17.0	17.0	17.0	17.0
MCS16	19.0	19.0	19.0	19.0	19.0
MCS23	17.0	17.0	17.0	17.0	17.0
MCS8 (256-QAM)	16.0	16.0	16.0	16.0	16.0

40 MHz Bandwidth Channels:

	5190 MHz	5230 MHz	5755 MHz	5795 MHz
MCS0	18.0	18.0	18.0	18.0
MCS7	17.0	17.0	17.0	17.0
MCS8	18.0	18.0	18.0	18.0
MCS15	17.0	17.0	17.0	17.0
MCS16	18.0	18.0	18.0	18.0
MCS23	17.0	17.0	17.0	17.0
MCS9 (256-QAM)	15.0	15.0	15.0	15.0

80 MHz Bandwidth Channels:

	5210 MHz	5775 MHz
MCS0	18.0	18.0
MCS9 (256-QAM)	15.0	15.0

CONFIGURATIONS

Configuration VDEI0009- 1

Software/Firmware Running during test	
Description	Version
ART2-GUI	2.3
CART	4.9

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Firebox T50-W (BS5AE7W) (original unit)	Sercomm Corporation	T50-W	70AF00069-3EB6

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
AC/DC Power Supply	Leader Electronics Inc.	NU60-F480125-I1NN	11000811421520000079
Host Laptop	Lenovo	4180-65U	R8-V8DGE 11/07
AC/DC Power Supply (Laptop)	Lenovo	42T4438	11S42T4438Z1ZHY61677D8

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Ethernet Cable	No	1.8m	No	Firebox T50-W (BS5AE7W)	Host Laptop
AC Power	No	1.8m	No	AC Mains	AC/DC Power Supply
DC Power	No	1.8m	Yes	AC/DC Power Supply	Firebox T50-W (BS5AE7W)
AC Power	No	1.0m	No	AC Mains	AC/DC Power Supply (Laptop)
DC Power	No	1.8m	Yes	AC/DC Power Supply (Laptop)	Host Laptop

CONFIGURATIONS

Configuration VDEI0009- 2

Software/Firmware Running during test	
Description	Version
ART2-GUI	2.3
CART	4.9

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Firebox T50-W (BS5AE7W) (original unit)	Sercomm Corporation	T50-W	70AF00069-3EB6

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
AC/DC Power Supply	Leader Electronics Inc.	NU60-F480125-I1NN	11000811421520000079
Host Laptop	Lenovo	4180-65U	R8-V8DGE 11/07
AC/DC Power Supply (Laptop)	Lenovo	42T4438	11S42T4438Z1ZHY61677D8

CONFIGURATIONS

Configuration VDEI0009- 3

Software/Firmware Running during test	
Description	Version
ART2-GUI	2.3
CART	4.9

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Firebox T50-W (BS5AE7W) (new unit)	Sercomm Corporation	T50-W	70AF02717-B385

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
AC/DC Power Supply	Leader Electronics Inc.	NU60-F480125-I1NN	11000811421520000079
Host Laptop	Lenovo	4180-65U	R8-V8DGE 11/07
AC/DC Power Supply (Laptop)	Lenovo	42T4438	11S42T4438Z1ZHY61677D8

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Power	No	1.8m	No	AC Mains	AC/DC Power Supply
DC Power	No	1.8m	Yes	AC/DC Power Supply	Firebox T50-W (BS5AE7W)
AC Power	No	1.0m	No	AC Mains	AC/DC Power Supply (Laptop)
DC Power	No	1.8m	Yes	AC/DC Power Supply (Laptop)	Host Laptop
Ethernet Cable	No	7.6m	No	Firebox T50-W (BS5AE7W)	Host Laptop

CONFIGURATIONS

Configuration VDEI0009- 4

Software/Firmware Running during test	
Description	Version
ART2-GUI	2.3
CART	4.9

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Firebox T30-W (BS3AE5W) (new unit)	Sercomm Corporation	T30-W	70AD00074-8977

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
AC/DC Power Supply	Leader Electronics Inc.	NU60-F480125-I1NN	11000811421520000079
Host Laptop	Lenovo	4180-65U	R8-V8DGE 11/07
AC/DC Power Supply (Laptop)	Lenovo	42T4438	11S42T4438Z1ZH61677D8

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Power	No	1.8m	No	AC Mains	AC/DC Power Supply
DC Power	No	1.8m	Yes	AC/DC Power Supply	Firebox T30-W (BS3AE5W)
AC Power	No	1.0m	No	AC Mains	AC/DC Power Supply (Laptop)
DC Power	No	1.8m	Yes	AC/DC Power Supply (Laptop)	Host Laptop
Ethernet Cable	No	7.6m	No	Firebox T30-W (BS3AE5W)	Host Laptop

CONFIGURATIONS

Configuration VDEI0009- 5

Software/Firmware Running during test	
Description	Version
ART2-GUI	2.3
CART	4.9

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Firebox T50-W (BS5AE7W) (new unit)	Sercomm Corporation	T50-W	70AF02717-B385

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
AC/DC Power Supply	Leader Electronics Inc.	NU60-F480125-I1NN	11000811421520000079
Host Laptop	Lenovo	4180-65U	R8-V8DGE 11/07
AC/DC Power Supply (Laptop)	Lenovo	42T4438	11S42T4438Z1ZHY61677D8

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Ethernet Cable	No	1.8m	No	Firebox T50-W (BS5AE7W)	Host Laptop
AC Power	No	1.8m	No	AC Mains	AC/DC Power Supply
DC Power	No	1.8m	Yes	AC/DC Power Supply (Firebox T50-W (BS5AE7W)
AC Power	No	1.0m	No	AC Mains	AC/DC Power Supply (Laptop)
DC Power	No	1.8m	Yes	AC/DC Power Supply (Laptop)	Host Laptop

CONFIGURATIONS

Configuration VDEI0009- 7

Software/Firmware Running during test	
Description	Version
ART2-GUI	2.3
CART	4.9

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Firebox T50-W (BS5AE7W) (new unit)	Sercomm Corporation	T50-W	70AF02717-B385

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
AC/DC Power Supply	Leader Electronics Inc.	NU60-U480125-I1	1517 000044
Host Laptop	Lenovo	4180-65U	R8-V8DGE 11/07
AC/DC Power Supply (Laptop)	Lenovo	42T4438	11S42T4438Z1ZH61677D8

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Power	No	1.8m	No	AC Mains	AC/DC Power Supply
DC Power	No	1.8m	Yes	AC/DC Power Supply	Firebox T50-W (BS5AE7W)
AC Power	No	1.0m	No	AC Mains	AC/DC Power Supply (Laptop)
DC Power	No	1.8m	Yes	AC/DC Power Supply (Laptop)	Host Laptop
Ethernet Cable	No	7.6m	No	Firebox T50-W (BS5AE7W)	Host Laptop

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	7/31/2015	Duty Cycle	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	8/7/2015	Emissions/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.
3	8/12/2015	Frequency Stability	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	9-11-2015	Maximum Conducted 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.
5	9/11/2015	Maximum 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.
6	9/27/2015	Spurious Radiated 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.
7	10/27/2015	Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

POWERLINE CONDUCTED EMISSIONS

TEST DESCRIPTION

The EUT will be powered either directly or indirectly from the AC power line. Therefore, conducted emissions measurements were made on the AC input of the EUT, or on the AC input of the device used to power the EUT. The AC power line conducted emissions were measured with the EUT operating at the lowest, the highest, and a middle channel in the operational band. The EUT was transmitting at its maximum data rate. For each mode, the spectrum was scanned from 150 kHz to 30 MHz. The test setup and procedures were in accordance with ANSI C63.10.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Cable - Conducted Cable Assembly	Northwest EMC	TXA, HHZ, TQR	TXAA	5/27/2015	5/27/2016
Receiver	Rohde & Schwarz	ESCI	ARF	6/9/2015	6/9/2016
LISN	Solar Electronics	9252-50-R-24-BNC	LJK	9/23/2015	9/23/2016
LISN	Solar Electronics	9252-50-R-24-BNC	LJL	9/23/2015	9/23/2016

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	2.4 dB	-2.4 dB

CONFIGURATIONS INVESTIGATED

VDEI0009-3

MODES INVESTIGATED

Continuously Transmitting at Chain A High Channel @ 5240MHz, 6Mbps
Continuously Transmitting at Chain A High Channel @ 5825MHz, 6Mbps
Continuously Transmitting at Chain A Low Channel @ 5180MHz, 6Mbps
Continuously Transmitting at Chain A Low Channel @ 5745MHz, 6Mbps
Continuously Transmitting at Chain A Mid Channel @ 5785MHz, 6Mbps
Continuously Transmitting at Chain B High Channel @ 5240MHz, 6Mbps
Continuously Transmitting at Chain B High Channel @ 5825MHz, 6Mbps
Continuously Transmitting at Chain B Low Channel @ 5180MHz, 6Mbps
Continuously Transmitting at Chain B Low Channel @ 5745MHz, 6Mbps
Continuously Transmitting at Chain B Mid Channel @ 5785MHz, 6Mbps
Continuously Transmitting at Chain C High Channel @ 5240MHz, 6Mbps
Continuously Transmitting at Chain C High Channel @ 5825MHz, 6Mbps
Continuously Transmitting at Chain C Low Channel @ 5180MHz, 6Mbps
Continuously Transmitting at Chain C Low Channel @ 5745MHz, 6Mbps
Continuously Transmitting at Chain C Mid Channel @ 5785MHz, 6Mbps

POWERLINE CONDUCTED EMISSIONS



WTD 2015.09.03
PSA-ESCI 2015.03.03, EmRP5 2015.08.28

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/29/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.5°C
Attendees:	None	Relative Humidity:	44.3%
Customer Project:	None	Bar. Pressure:	1016 mb
Tested By:	Frank Sun	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	VDEI0009-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	21	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

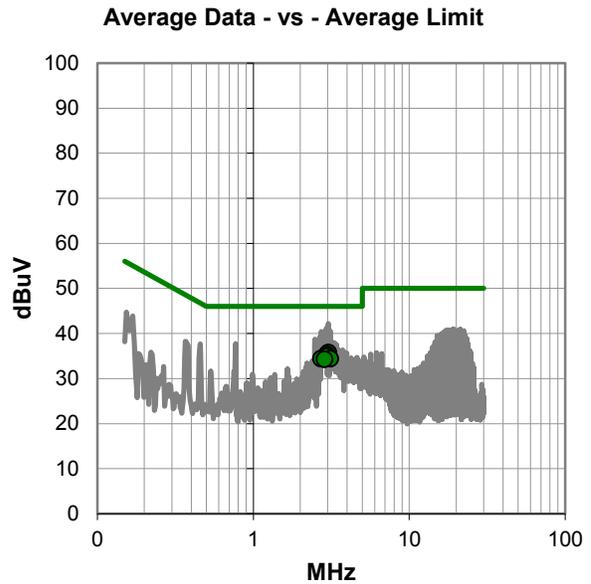
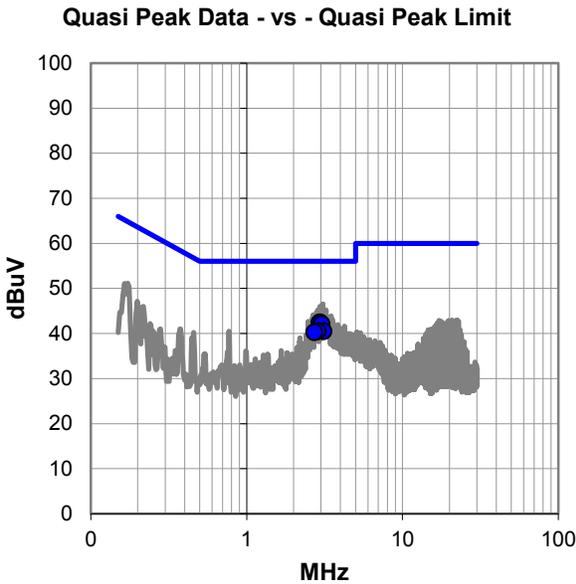
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EUT OPERATING MODES

Continuously Transmitting at Chain A Low Channel @ 5180MHz, 6Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #21

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.964	22.5	19.9	42.4	56.0	-13.6
2.938	22.5	19.9	42.4	56.0	-13.6
3.032	22.2	19.9	42.1	56.0	-13.9
3.121	20.6	19.9	40.5	56.0	-15.5
2.862	20.6	19.9	40.5	56.0	-15.5
2.727	20.4	19.8	40.2	56.0	-15.8

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.032	15.8	19.9	35.7	46.0	-10.3
2.964	15.4	19.9	35.3	46.0	-10.7
2.938	15.0	19.9	34.9	46.0	-11.1
2.727	14.6	19.8	34.4	46.0	-11.6
3.121	14.5	19.9	34.4	46.0	-11.6
2.862	14.4	19.9	34.3	46.0	-11.7

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS



WTD 2015.09.03
PSA-ESCI 2015.03.03, EmRP5 2015.08.28

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/29/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.5°C
Attendees:	None	Relative Humidity:	44.3%
Customer Project:	None	Bar. Pressure:	1016 mb
Tested By:	Frank Sun	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	VDEI0009-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	22	Line:	Neutral	Add. Ext. Attenuation (dB):	0
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COMMENTS

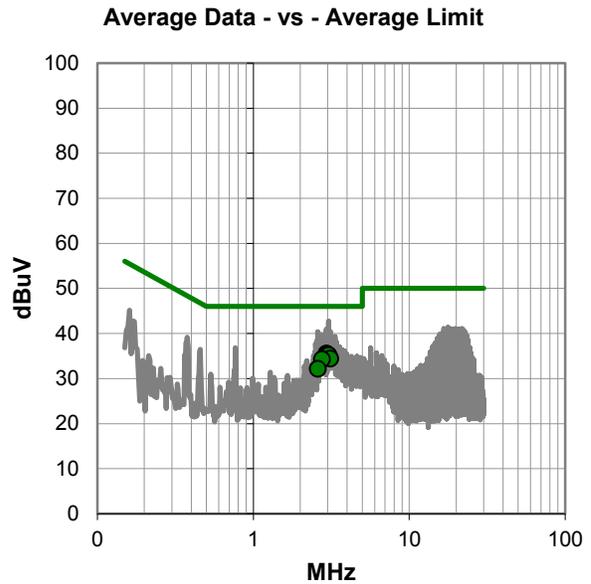
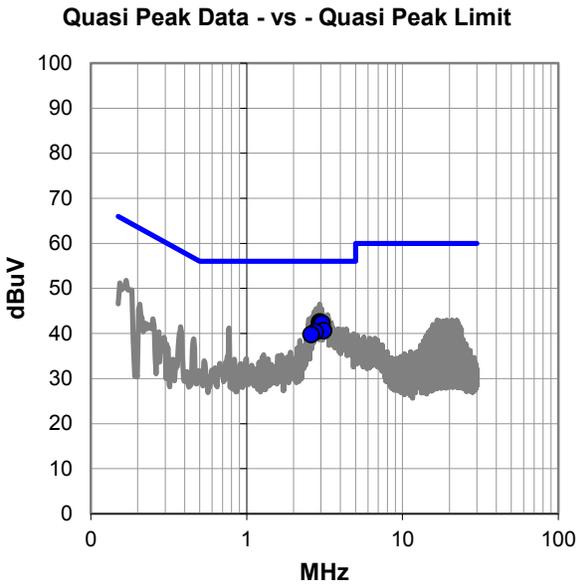
None

EUT OPERATING MODES

Continuously Transmitting at Chain A Low Channel @ 5180MHz, 6Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #22

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.945	22.6	19.9	42.5	56.0	-13.5
2.965	22.3	19.9	42.2	56.0	-13.8
3.050	22.3	19.9	42.2	56.0	-13.8
3.126	20.7	19.9	40.6	56.0	-15.4
2.757	20.5	19.8	40.3	56.0	-15.7
2.594	19.9	19.8	39.7	56.0	-16.3

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.945	15.6	19.9	35.5	46.0	-10.5
2.965	15.4	19.9	35.3	46.0	-10.7
3.050	15.3	19.9	35.2	46.0	-10.8
3.126	14.5	19.9	34.4	46.0	-11.6
2.757	14.4	19.8	34.2	46.0	-11.8
2.594	12.3	19.8	32.1	46.0	-13.9

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS



WTD 2015.09.03
PSA-ESCI 2015.03.03, EmRP5 2015.08.28

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/29/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.5°C
Attendees:	None	Relative Humidity:	44.3%
Customer Project:	None	Bar. Pressure:	1016 mb
Tested By:	Frank Sun	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	VDEI0009-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	23	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

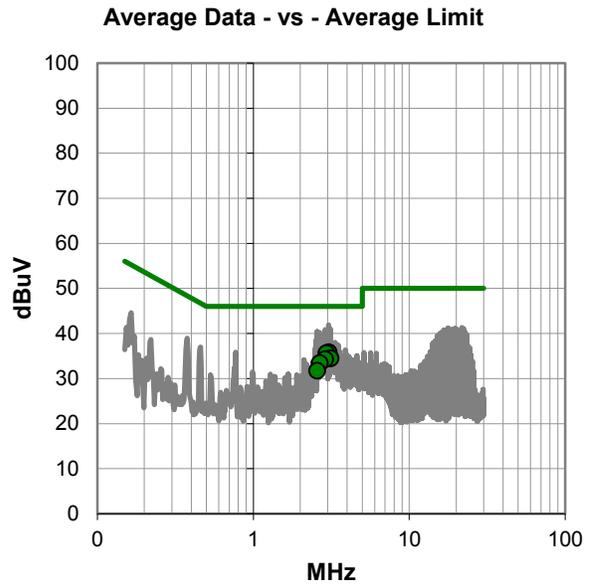
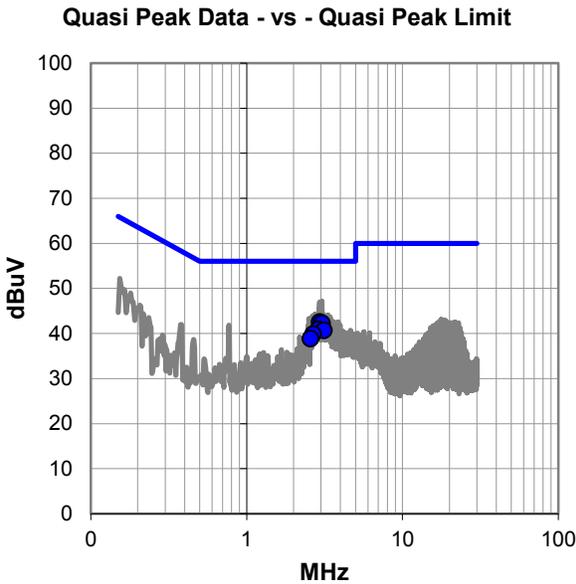
None

EUT OPERATING MODES

Continuously Transmitting at Chain A High Channel @ 5240MHz, 6Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #23

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.948	22.6	19.9	42.5	56.0	-13.5
3.046	22.3	19.9	42.2	56.0	-13.8
2.891	21.0	19.9	40.9	56.0	-15.1
3.128	20.8	19.9	40.7	56.0	-15.3
2.674	20.0	19.8	39.8	56.0	-16.2
2.568	19.0	19.8	38.8	56.0	-17.2

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.046	15.9	19.9	35.8	46.0	-10.2
2.948	15.7	19.9	35.6	46.0	-10.4
3.128	14.6	19.9	34.5	46.0	-11.5
2.891	14.4	19.9	34.3	46.0	-11.7
2.674	13.6	19.8	33.4	46.0	-12.6
2.568	11.9	19.8	31.7	46.0	-14.3

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS



WTD 2015.09.03
PSA-ESCI 2015.03.03, EmRP5 2015.08.28

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/29/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.5°C
Attendees:	None	Relative Humidity:	44.3%
Customer Project:	None	Bar. Pressure:	1016 mb
Tested By:	Frank Sun	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	VDEI0009-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	24	Line:	Neutral	Add. Ext. Attenuation (dB):	0
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COMMENTS

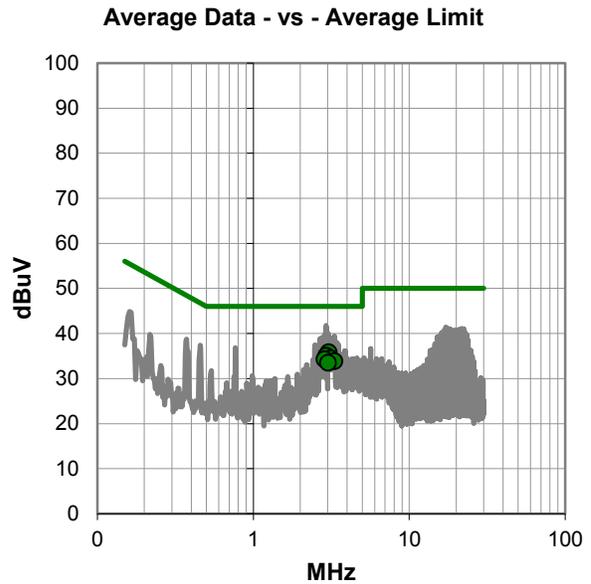
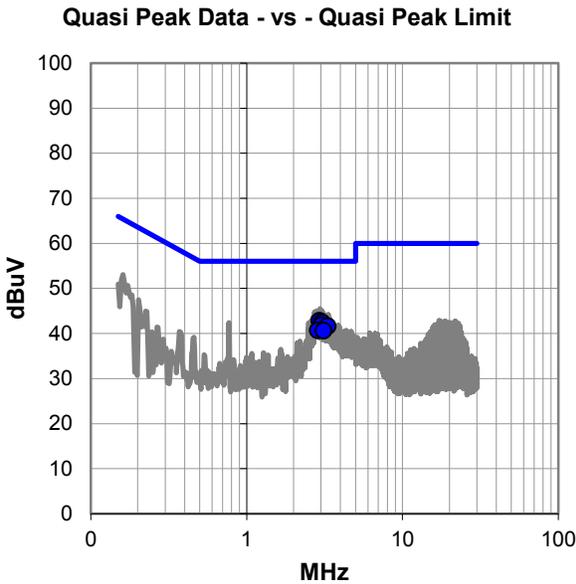
None

EUT OPERATING MODES

Continuously Transmitting at Chain A High Channel @ 5240MHz, 6Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #24

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.938	22.9	19.9	42.8	56.0	-13.2
3.049	22.5	19.9	42.4	56.0	-13.6
3.016	21.9	19.9	41.8	56.0	-14.2
3.315	21.7	19.9	41.6	56.0	-14.4
2.865	20.8	19.9	40.7	56.0	-15.3
3.126	20.7	19.9	40.6	56.0	-15.4

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.049	15.9	19.9	35.8	46.0	-10.2
2.938	15.1	19.9	35.0	46.0	-11.0
3.126	14.6	19.9	34.5	46.0	-11.5
2.865	14.4	19.9	34.3	46.0	-11.7
3.315	13.9	19.9	33.8	46.0	-12.2
3.016	13.6	19.9	33.5	46.0	-12.5

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS



WTD 2015.09.03
PSA-ESCI 2015.03.03, EmRP5 2015.08.28

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/29/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.5°C
Attendees:	None	Relative Humidity:	44.3%
Customer Project:	None	Bar. Pressure:	1016 mb
Tested By:	Frank Sun	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	VDEI0009-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	25	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

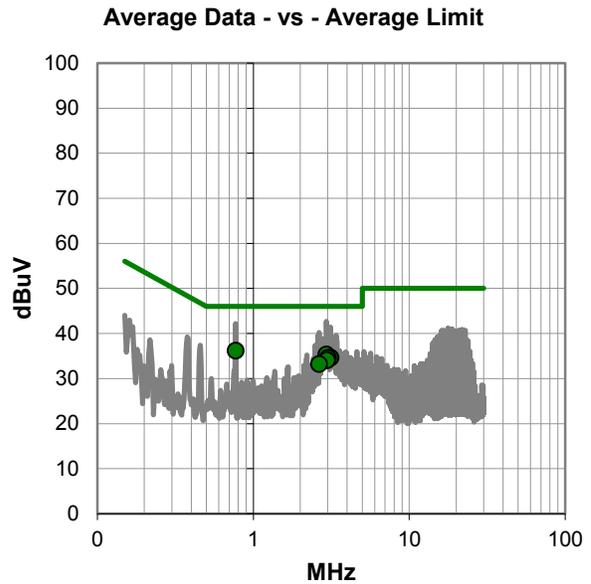
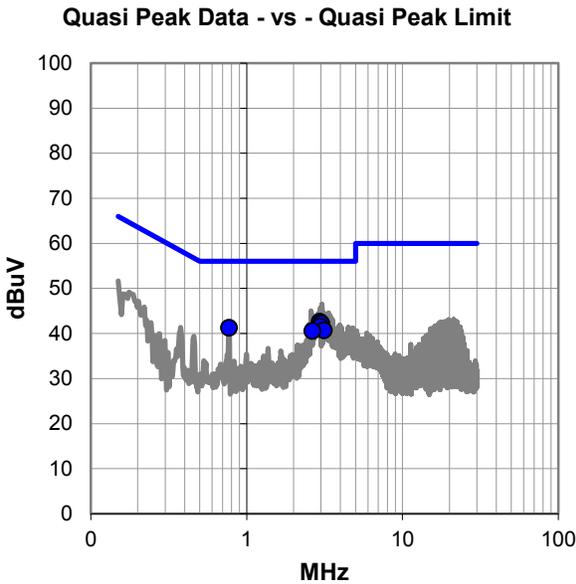
None

EUT OPERATING MODES

Continuously Transmitting at Chain B Low Channel @ 5180MHz, 6Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #25

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.952	22.7	19.9	42.6	56.0	-13.4
3.023	22.3	19.9	42.2	56.0	-13.8
2.979	21.6	19.9	41.5	56.0	-14.5
0.771	21.4	19.8	41.2	56.0	-14.8
3.130	20.8	19.9	40.7	56.0	-15.3
2.648	20.7	19.8	40.5	56.0	-15.5

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.771	16.3	19.8	36.1	46.0	-9.9
2.952	15.4	19.9	35.3	46.0	-10.7
3.130	14.7	19.9	34.6	46.0	-11.4
3.023	14.6	19.9	34.5	46.0	-11.5
2.979	14.1	19.9	34.0	46.0	-12.0
2.648	13.4	19.8	33.2	46.0	-12.8

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS



WTD 2015.09.03
PSA-ESCI 2015.03.03, EmRP5 2015.08.28

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/29/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.5°C
Attendees:	None	Relative Humidity:	44.3%
Customer Project:	None	Bar. Pressure:	1016 mb
Tested By:	Frank Sun	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	VDEI0009-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	26	Line:	Neutral	Add. Ext. Attenuation (dB):	0
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COMMENTS

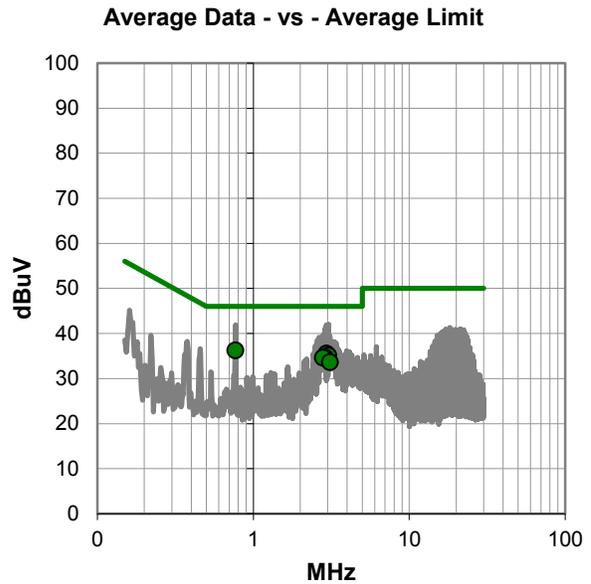
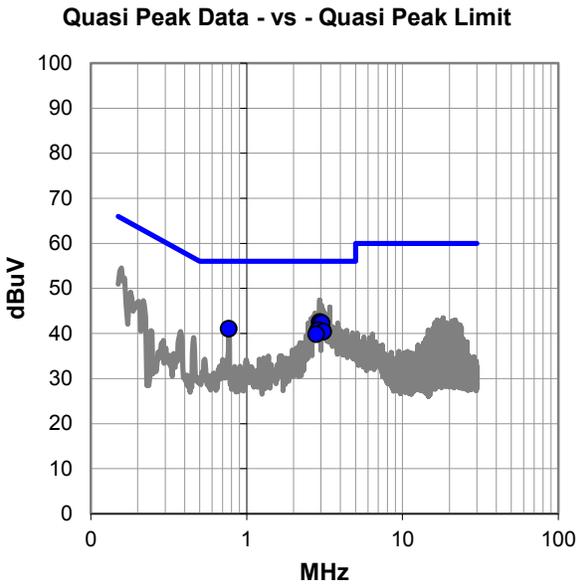
None

EUT OPERATING MODES

Continuously Transmitting at Chain B Low Channel @ 5180MHz, 6Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #26

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.951	22.6	19.9	42.5	56.0	-13.5
3.030	22.4	19.9	42.3	56.0	-13.7
0.770	21.2	19.8	41.0	56.0	-15.0
2.884	20.9	19.9	40.8	56.0	-15.2
3.106	20.5	19.9	40.4	56.0	-15.6
2.807	20.0	19.8	39.8	56.0	-16.2

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.770	16.4	19.8	36.2	46.0	-9.8
2.951	15.6	19.9	35.5	46.0	-10.5
3.030	15.2	19.9	35.1	46.0	-10.9
2.884	14.8	19.9	34.7	46.0	-11.3
2.807	14.8	19.8	34.6	46.0	-11.4
3.106	13.7	19.9	33.6	46.0	-12.4

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS



WTD 2015.09.03
PSA-ESCI 2015.03.03, EmRP5 2015.08.28

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/29/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.5°C
Attendees:	None	Relative Humidity:	44.3%
Customer Project:	None	Bar. Pressure:	1016 mb
Tested By:	Frank Sun	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	VDEI0009-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	27	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

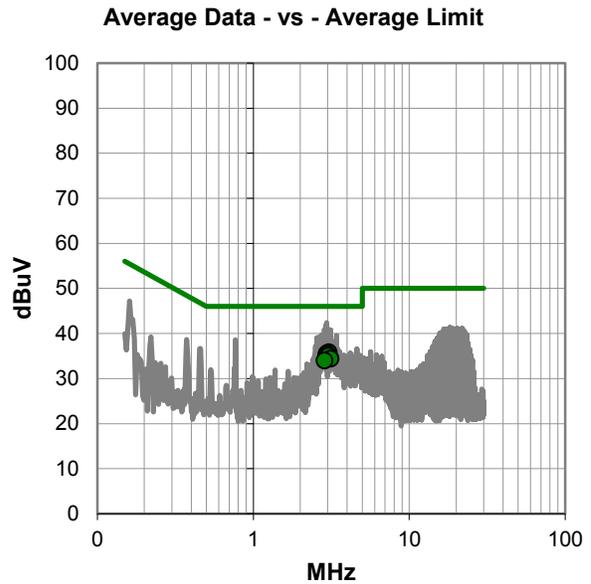
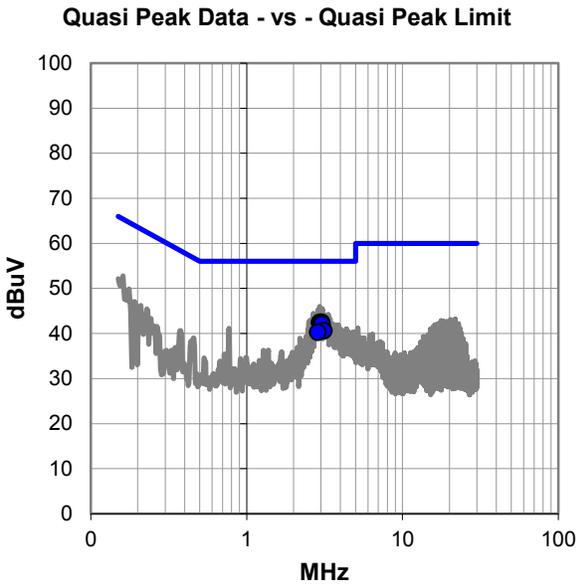
None

EUT OPERATING MODES

Continuously Transmitting at Chain B High Channel @ 5240MHz, 6Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #27

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.027	22.5	19.9	42.4	56.0	-13.6
2.944	22.5	19.9	42.4	56.0	-13.6
2.968	22.3	19.9	42.2	56.0	-13.8
3.044	22.2	19.9	42.1	56.0	-13.9
3.135	20.7	19.9	40.6	56.0	-15.4
2.863	20.4	19.9	40.3	56.0	-15.7

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.044	15.9	19.9	35.8	46.0	-10.2
2.968	15.6	19.9	35.5	46.0	-10.5
2.944	15.2	19.9	35.1	46.0	-10.9
3.027	15.1	19.9	35.0	46.0	-11.0
3.135	14.5	19.9	34.4	46.0	-11.6
2.863	14.1	19.9	34.0	46.0	-12.0

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS



WTD 2015.09.03
PSA-ESCI 2015.03.03, EmRP5 2015.08.28

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/29/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.5°C
Attendees:	None	Relative Humidity:	44.3%
Customer Project:	None	Bar. Pressure:	1016 mb
Tested By:	Frank Sun	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	VDEI0009-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	28	Line:	Neutral	Add. Ext. Attenuation (dB):	0
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COMMENTS

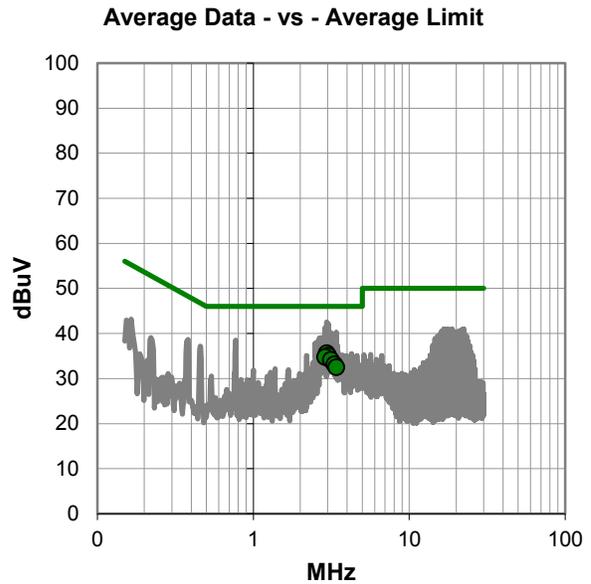
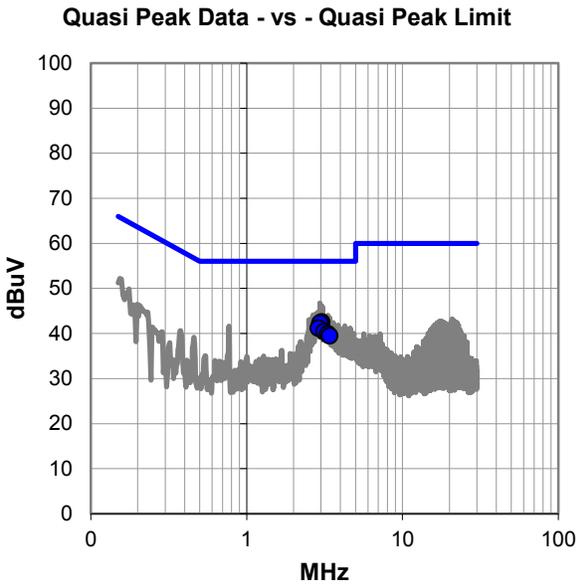
None

EUT OPERATING MODES

Continuously Transmitting at Chain B High Channel @ 5240MHz, 6Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #28

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.034	22.6	19.9	42.5	56.0	-13.5
2.961	22.4	19.9	42.3	56.0	-13.7
2.897	21.3	19.9	41.2	56.0	-14.8
3.147	20.5	19.9	40.4	56.0	-15.6
3.324	20.0	19.9	39.9	56.0	-16.1
3.411	19.6	19.9	39.5	56.0	-16.5

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.961	15.7	19.9	35.6	46.0	-10.4
3.034	15.1	19.9	35.0	46.0	-11.0
2.897	14.9	19.9	34.8	46.0	-11.2
3.147	14.2	19.9	34.1	46.0	-11.9
3.324	13.2	19.9	33.1	46.0	-12.9
3.411	12.6	19.9	32.5	46.0	-13.5

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS



WTD 2015.09.03
PSA-ESCI 2015.03.03, EmRP5 2015.08.28

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/29/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.5°C
Attendees:	None	Relative Humidity:	44.3%
Customer Project:	None	Bar. Pressure:	1016 mb
Tested By:	Frank Sun	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	VDEI0009-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	29	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

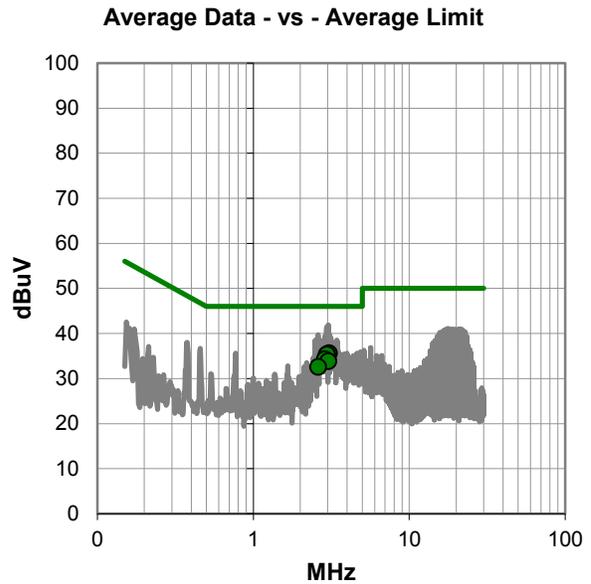
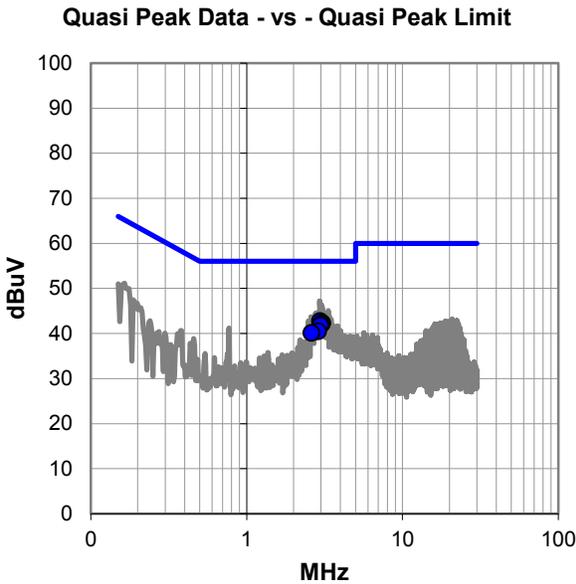
None

EUT OPERATING MODES

Continuously Transmitting at Chain C Low Channel @ 5180MHz, 6Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #29

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.958	22.8	19.9	42.7	56.0	-13.3
3.057	22.4	19.9	42.3	56.0	-13.7
3.032	22.2	19.9	42.1	56.0	-13.9
2.977	21.9	19.9	41.8	56.0	-14.2
2.874	20.6	19.9	40.5	56.0	-15.5
2.605	20.3	19.8	40.1	56.0	-15.9

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.057	15.7	19.9	35.6	46.0	-10.4
2.958	15.4	19.9	35.3	46.0	-10.7
2.977	15.4	19.9	35.3	46.0	-10.7
2.874	14.4	19.9	34.3	46.0	-11.7
3.032	13.9	19.9	33.8	46.0	-12.2
2.605	12.7	19.8	32.5	46.0	-13.5

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS



WTD 2015.09.03
PSA-ESCI 2015.03.03, EmRP5 2015.08.28

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/29/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.5°C
Attendees:	None	Relative Humidity:	44.3%
Customer Project:	None	Bar. Pressure:	1016 mb
Tested By:	Frank Sun	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	VDEI0009-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	30	Line:	Neutral	Add. Ext. Attenuation (dB):	0
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COMMENTS

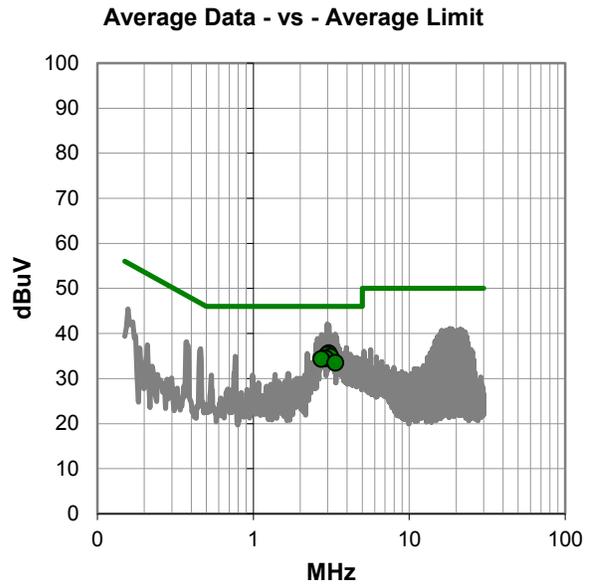
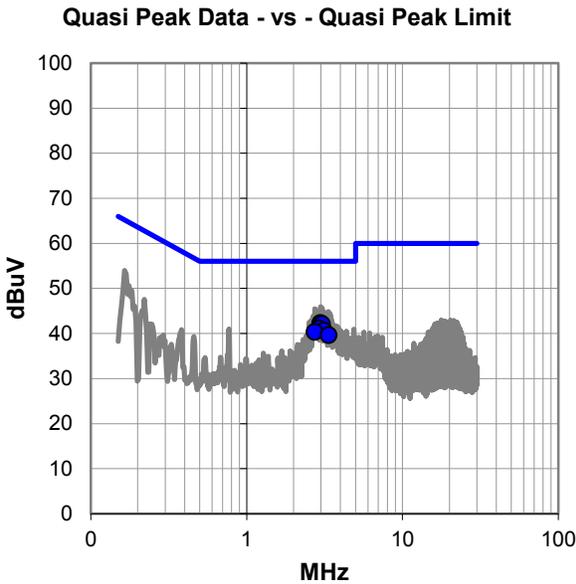
None

EUT OPERATING MODES

Continuously Transmitting at Chain C Low Channel @ 5180MHz, 6Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #30

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.978	22.4	19.9	42.3	56.0	-13.7
3.041	22.2	19.9	42.1	56.0	-13.9
2.902	21.2	19.9	41.1	56.0	-14.9
3.131	20.7	19.9	40.6	56.0	-15.4
2.737	20.5	19.8	40.3	56.0	-15.7
3.360	19.7	19.9	39.6	56.0	-16.4

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.041	15.7	19.9	35.6	46.0	-10.4
2.978	15.3	19.9	35.2	46.0	-10.8
3.131	14.9	19.9	34.8	46.0	-11.2
2.902	14.6	19.9	34.5	46.0	-11.5
2.737	14.5	19.8	34.3	46.0	-11.7
3.360	13.6	19.9	33.5	46.0	-12.5

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS



WTD 2015.09.03
PSA-ESCI 2015.03.03, EmRP5 2015.08.28

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/29/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.5°C
Attendees:	None	Relative Humidity:	44.3%
Customer Project:	None	Bar. Pressure:	1016 mb
Tested By:	Frank Sun	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	VDEI0009-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	31	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

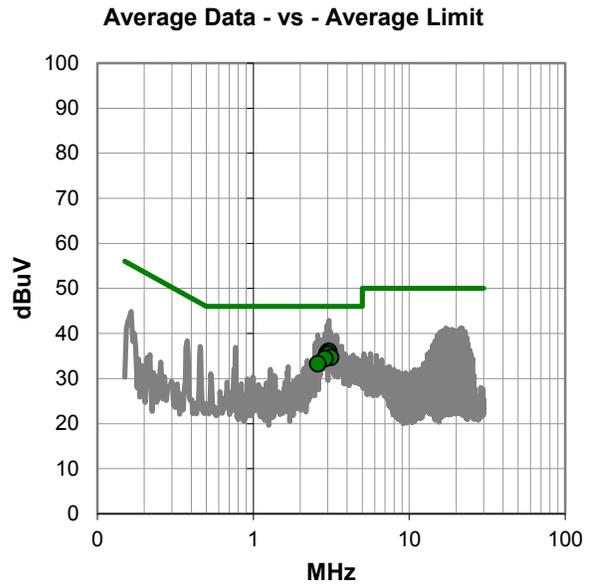
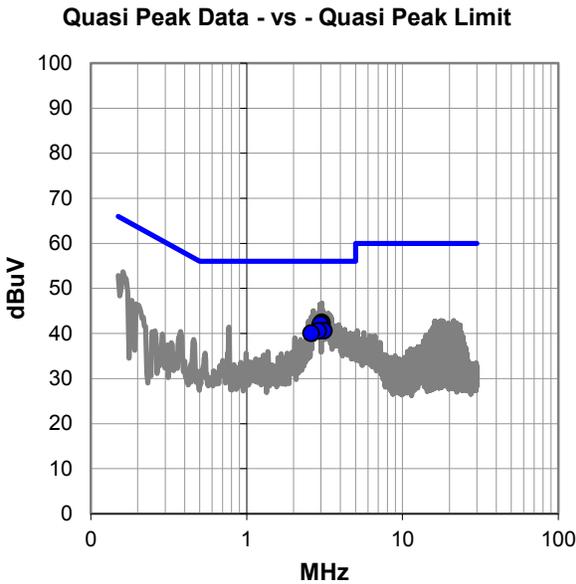
None

EUT OPERATING MODES

Continuously Transmitting at Chain C High Channel @ 5240MHz, 6Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #31

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.037	22.5	19.9	42.4	56.0	-13.6
3.052	22.3	19.9	42.2	56.0	-13.8
2.971	22.1	19.9	42.0	56.0	-14.0
3.128	20.7	19.9	40.6	56.0	-15.4
2.874	20.7	19.9	40.6	56.0	-15.4
2.598	20.2	19.8	40.0	56.0	-16.0

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.052	16.1	19.9	36.0	46.0	-10.0
2.971	15.6	19.9	35.5	46.0	-10.5
3.037	15.4	19.9	35.3	46.0	-10.7
3.128	14.8	19.9	34.7	46.0	-11.3
2.874	14.5	19.9	34.4	46.0	-11.6
2.598	13.4	19.8	33.2	46.0	-12.8

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS



WTD 2015.09.03
PSA-ESCI 2015.03.03, EmRP5 2015.08.28

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/29/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.5°C
Attendees:	None	Relative Humidity:	44.3%
Customer Project:	None	Bar. Pressure:	1016 mb
Tested By:	Frank Sun	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	VDEI0009-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	32	Line:	Neutral	Add. Ext. Attenuation (dB):	0
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COMMENTS

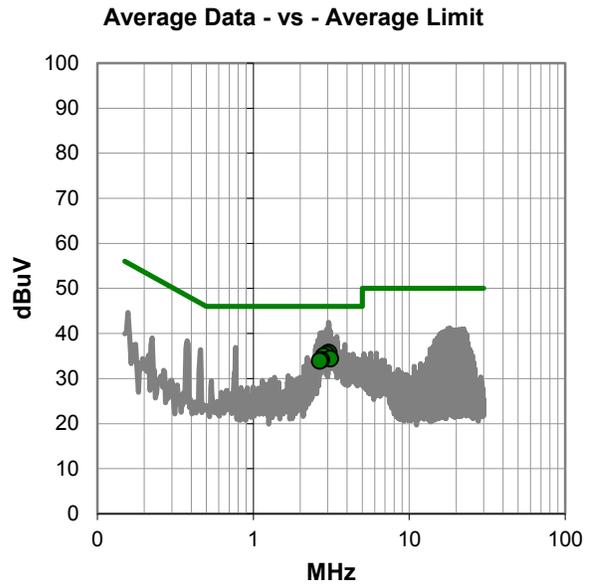
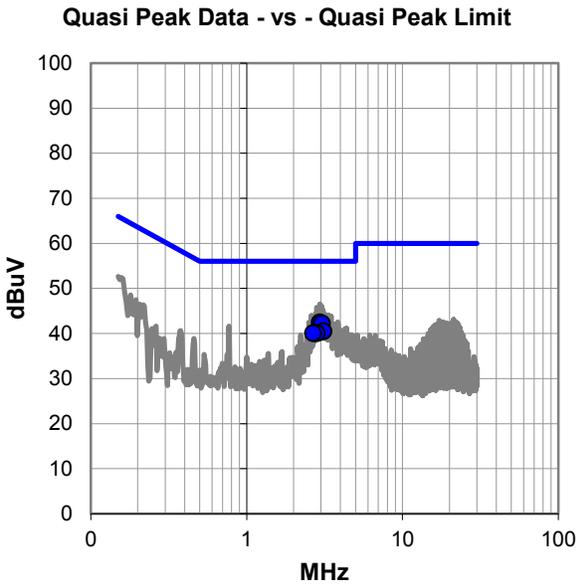
None

EUT OPERATING MODES

Continuously Transmitting at Chain C High Channel @ 5240MHz, 6Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #32

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.956	22.5	19.9	42.4	56.0	-13.6
3.043	22.3	19.9	42.2	56.0	-13.8
3.123	20.6	19.9	40.5	56.0	-15.5
2.735	20.3	19.8	40.1	56.0	-15.9
2.825	20.2	19.8	40.0	56.0	-16.0
2.672	20.2	19.8	40.0	56.0	-16.0

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.043	15.8	19.9	35.7	46.0	-10.3
2.956	15.5	19.9	35.4	46.0	-10.6
2.825	15.1	19.8	34.9	46.0	-11.1
3.123	14.5	19.9	34.4	46.0	-11.6
2.735	14.3	19.8	34.1	46.0	-11.9
2.672	14.1	19.8	33.9	46.0	-12.1

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS



WTD 2015.09.03
PSA-ESCI 2015.03.03, EmRP5 2015.08.28

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/29/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.5°C
Attendees:	None	Relative Humidity:	44.3%
Customer Project:	None	Bar. Pressure:	1016 mb
Tested By:	Frank Sun	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	VDEI0009-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	33	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

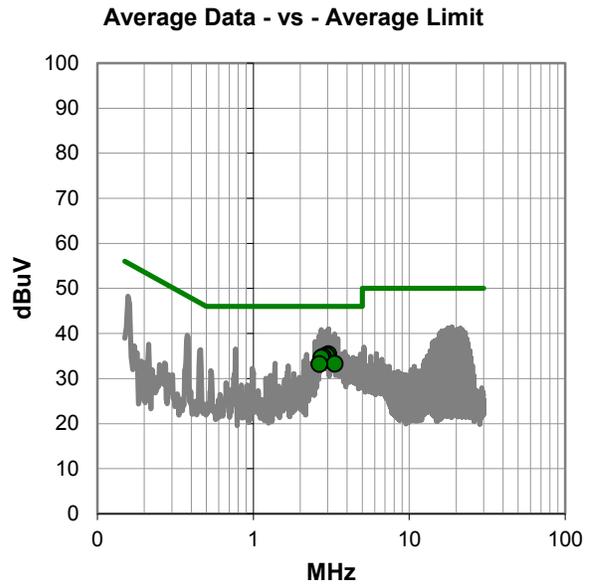
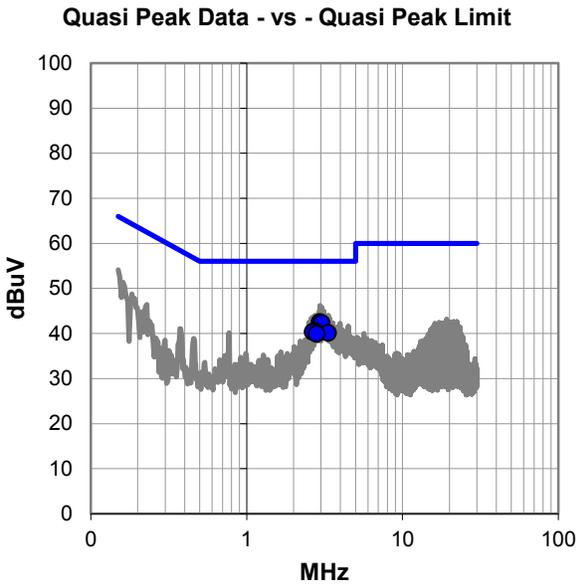
None

EUT OPERATING MODES

Continuously Transmitting at Chain A Low Channel @ 5745MHz, 6Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #33

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.953	22.6	19.9	42.5	56.0	-13.5
3.036	22.4	19.9	42.3	56.0	-13.7
2.737	20.7	19.8	40.5	56.0	-15.5
2.656	20.5	19.8	40.3	56.0	-15.7
3.327	20.2	19.9	40.1	56.0	-15.9
2.819	20.1	19.8	39.9	56.0	-16.1

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.036	15.5	19.9	35.4	46.0	-10.6
2.953	15.2	19.9	35.1	46.0	-10.9
2.819	15.0	19.8	34.8	46.0	-11.2
2.737	14.8	19.8	34.6	46.0	-11.4
3.327	13.4	19.9	33.3	46.0	-12.7
2.656	13.4	19.8	33.2	46.0	-12.8

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS



WTD 2015.09.03
PSA-ESCI 2015.03.03, EmRP5 2015.08.28

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/29/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.5°C
Attendees:	None	Relative Humidity:	44.3%
Customer Project:	None	Bar. Pressure:	1016 mb
Tested By:	Frank Sun	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	VDEI0009-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	34	Line:	Neutral	Add. Ext. Attenuation (dB):	0
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COMMENTS

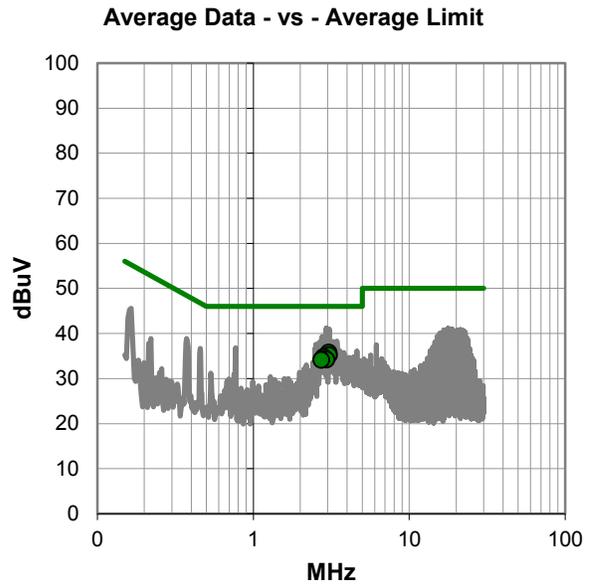
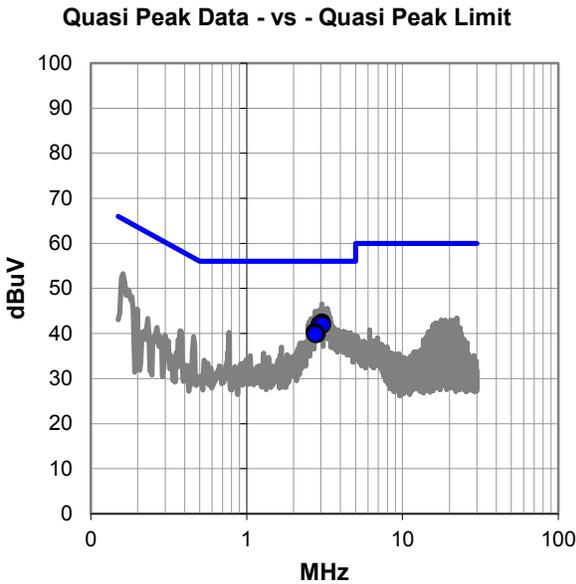
None

EUT OPERATING MODES

Continuously Transmitting at Chain A Low Channel @ 5745MHz, 6Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #34

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.042	22.5	19.9	42.4	56.0	-13.6
2.945	22.2	19.9	42.1	56.0	-13.9
3.061	22.0	19.9	41.9	56.0	-14.1
2.734	20.5	19.8	40.3	56.0	-15.7
2.826	20.0	19.8	39.8	56.0	-16.2
2.762	20.0	19.8	39.8	56.0	-16.2

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.042	15.8	19.9	35.7	46.0	-10.3
3.061	15.3	19.9	35.2	46.0	-10.8
2.826	14.9	19.8	34.7	46.0	-11.3
2.762	14.4	19.8	34.2	46.0	-11.8
2.945	14.3	19.9	34.2	46.0	-11.8
2.734	14.3	19.8	34.1	46.0	-11.9

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS



WTD 2015.09.03
PSA-ESCI 2015.03.03, EmRP5 2015.08.28

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/29/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.5°C
Attendees:	None	Relative Humidity:	44.3%
Customer Project:	None	Bar. Pressure:	1016 mb
Tested By:	Frank Sun	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	VDEI0009-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	35	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

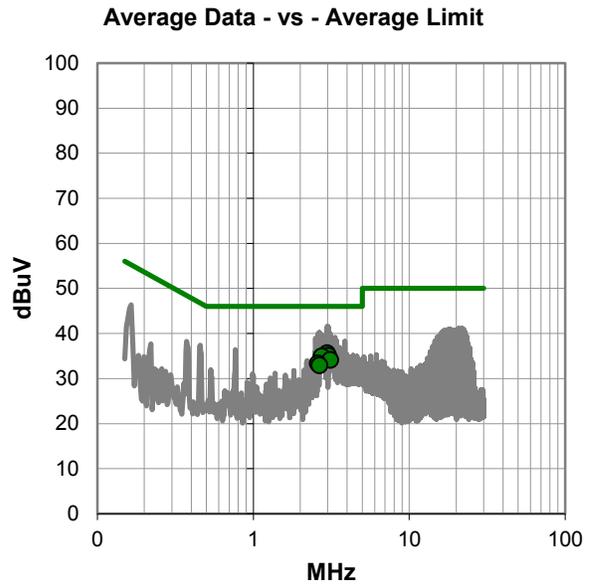
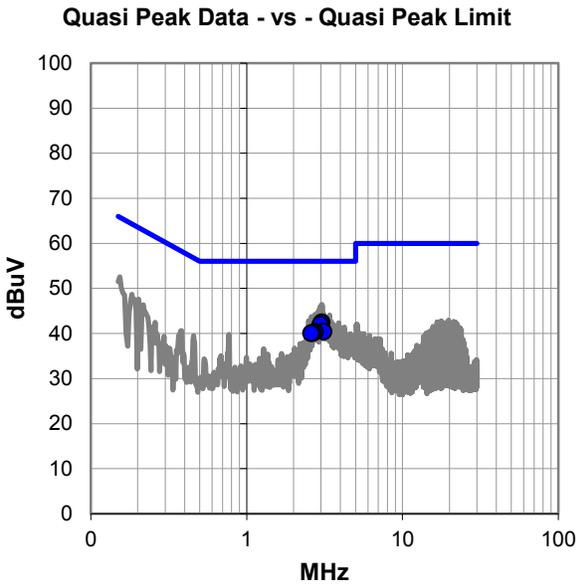
None

EUT OPERATING MODES

Continuously Transmitting at Chain A Mid Channel @ 5785MHz, 6Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #35

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.034	22.5	19.9	42.4	56.0	-13.6
2.971	22.0	19.9	41.9	56.0	-14.1
3.114	20.5	19.9	40.4	56.0	-15.6
2.745	20.5	19.8	40.3	56.0	-15.7
2.656	20.3	19.8	40.1	56.0	-15.9
2.598	20.2	19.8	40.0	56.0	-16.0

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.971	15.7	19.9	35.6	46.0	-10.4
3.034	15.1	19.9	35.0	46.0	-11.0
2.745	15.1	19.8	34.9	46.0	-11.1
3.114	14.2	19.9	34.1	46.0	-11.9
2.598	13.5	19.8	33.3	46.0	-12.7
2.656	13.1	19.8	32.9	46.0	-13.1

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS



WTD 2015.09.03
PSA-ESCI 2015.03.03, EmRP5 2015.08.28

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/29/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.5°C
Attendees:	None	Relative Humidity:	44.3%
Customer Project:	None	Bar. Pressure:	1016 mb
Tested By:	Frank Sun	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	VDEI0009-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	36	Line:	Neutral	Add. Ext. Attenuation (dB):	0
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COMMENTS

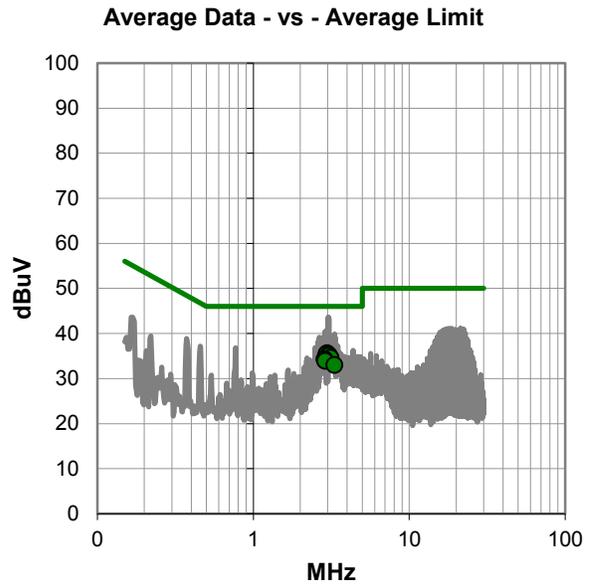
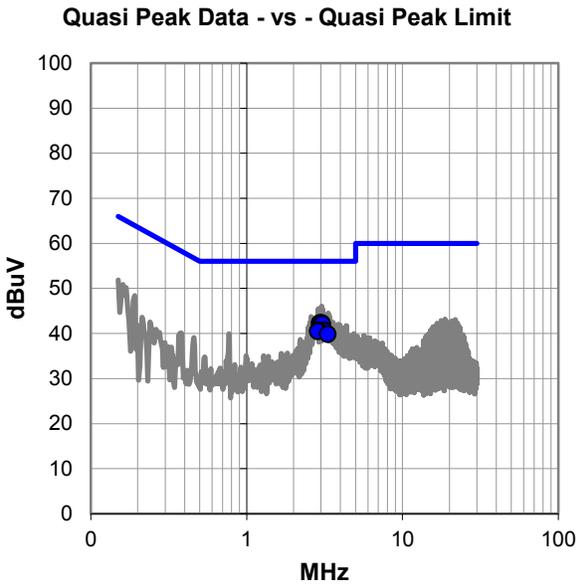
None

EUT OPERATING MODES

Continuously Transmitting at Chain A Mid Channel @ 5785MHz, 6Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #36

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.952	22.4	19.9	42.3	56.0	-13.7
3.032	22.4	19.9	42.3	56.0	-13.7
2.973	22.3	19.9	42.2	56.0	-13.8
3.059	22.2	19.9	42.1	56.0	-13.9
3.139	20.8	19.9	40.7	56.0	-15.3
2.901	20.8	19.9	40.7	56.0	-15.3
2.869	20.6	19.9	40.5	56.0	-15.5
3.323	19.9	19.9	39.8	56.0	-16.2

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.973	15.7	19.9	35.6	46.0	-10.4
2.952	15.5	19.9	35.4	46.0	-10.6
3.059	15.3	19.9	35.2	46.0	-10.8
3.032	15.1	19.9	35.0	46.0	-11.0
3.139	14.7	19.9	34.6	46.0	-11.4
2.869	14.4	19.9	34.3	46.0	-11.7
2.901	14.0	19.9	33.9	46.0	-12.1
3.323	13.1	19.9	33.0	46.0	-13.0

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS



WTD 2015.09.03
PSA-ESCI 2015.03.03, EmRP5 2015.08.28

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/29/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.5°C
Attendees:	None	Relative Humidity:	44.3%
Customer Project:	None	Bar. Pressure:	1016 mb
Tested By:	Frank Sun	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	VDEI0009-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	37	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

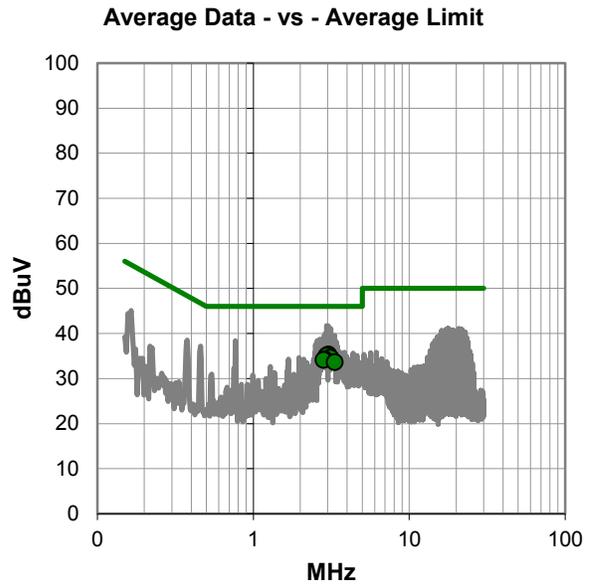
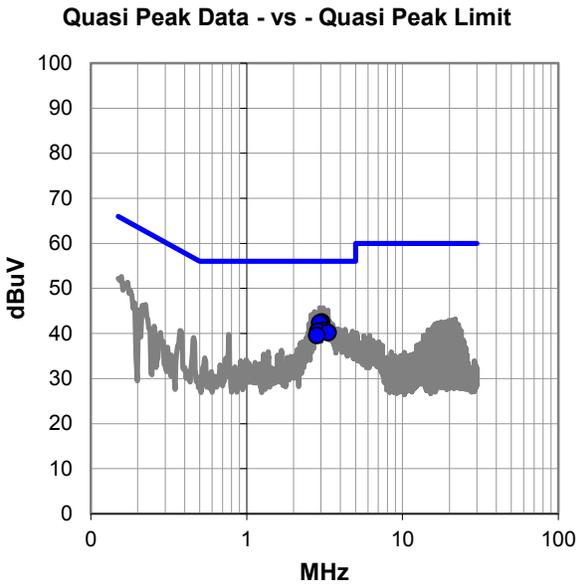
None

EUT OPERATING MODES

Continuously Transmitting at Chain A High Channel @ 5825MHz, 6Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #37

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.037	22.6	19.9	42.5	56.0	-13.5
2.950	22.4	19.9	42.3	56.0	-13.7
3.136	20.8	19.9	40.7	56.0	-15.3
2.873	20.6	19.9	40.5	56.0	-15.5
3.326	20.3	19.9	40.2	56.0	-15.8
2.826	19.7	19.8	39.5	56.0	-16.5

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.037	15.4	19.9	35.3	46.0	-10.7
2.950	15.1	19.9	35.0	46.0	-11.0
3.136	14.7	19.9	34.6	46.0	-11.4
2.873	14.4	19.9	34.3	46.0	-11.7
2.826	14.3	19.8	34.1	46.0	-11.9
3.326	13.7	19.9	33.6	46.0	-12.4

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS



WTD 2015.09.03
PSA-ESCI 2015.03.03, EmRP5 2015.08.28

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/29/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.5°C
Attendees:	None	Relative Humidity:	44.3%
Customer Project:	None	Bar. Pressure:	1016 mb
Tested By:	Frank Sun	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	VDEI0009-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	38	Line:	Neutral	Add. Ext. Attenuation (dB):	0
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COMMENTS

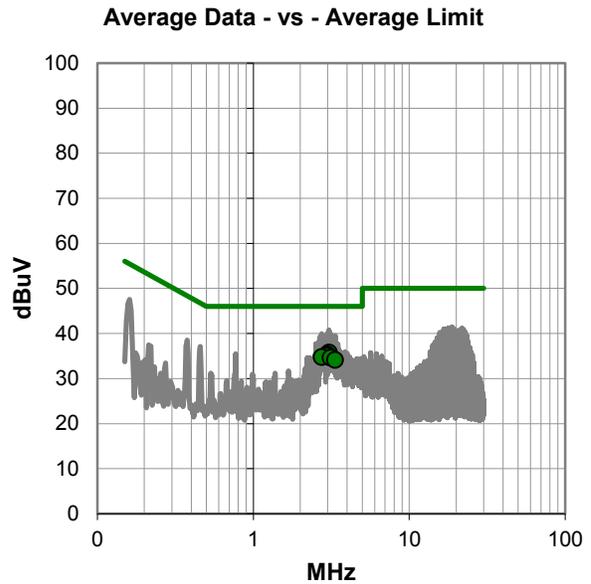
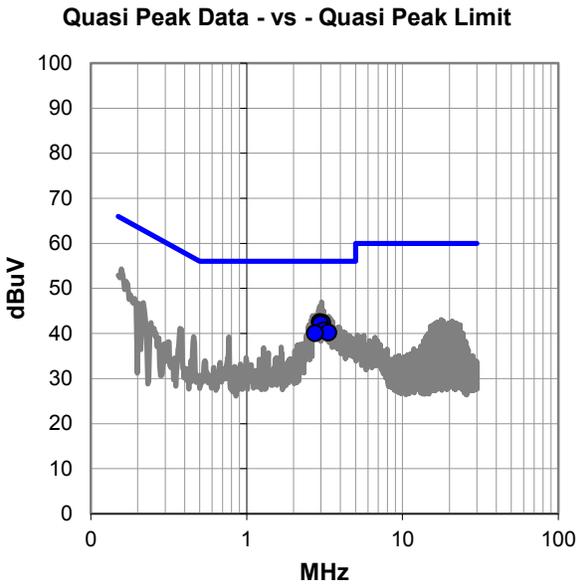
None

EUT OPERATING MODES

Continuously Transmitting at Chain A High Channel @ 5825MHz, 6Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #38

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.949	22.6	19.9	42.5	56.0	-13.5
3.056	22.5	19.9	42.4	56.0	-13.6
2.975	22.2	19.9	42.1	56.0	-13.9
3.131	20.8	19.9	40.7	56.0	-15.3
3.342	20.3	19.9	40.2	56.0	-15.8
2.752	20.2	19.8	40.0	56.0	-16.0

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.056	15.8	19.9	35.7	46.0	-10.3
2.975	15.4	19.9	35.3	46.0	-10.7
2.949	15.1	19.9	35.0	46.0	-11.0
2.752	14.9	19.8	34.7	46.0	-11.3
3.131	14.7	19.9	34.6	46.0	-11.4
3.342	14.2	19.9	34.1	46.0	-11.9

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS



WTD 2015.09.03
PSA-ESCI 2015.03.03, EmRP5 2015.08.28

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/29/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.5°C
Attendees:	None	Relative Humidity:	44.3%
Customer Project:	None	Bar. Pressure:	1016 mb
Tested By:	Frank Sun	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	VDEI0009-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	39	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

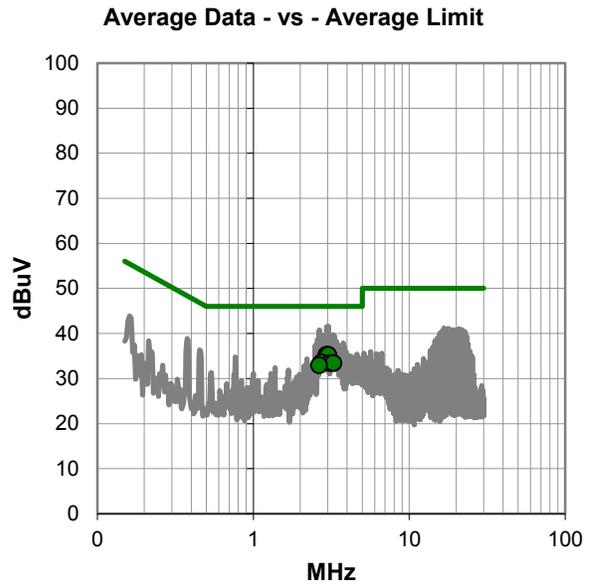
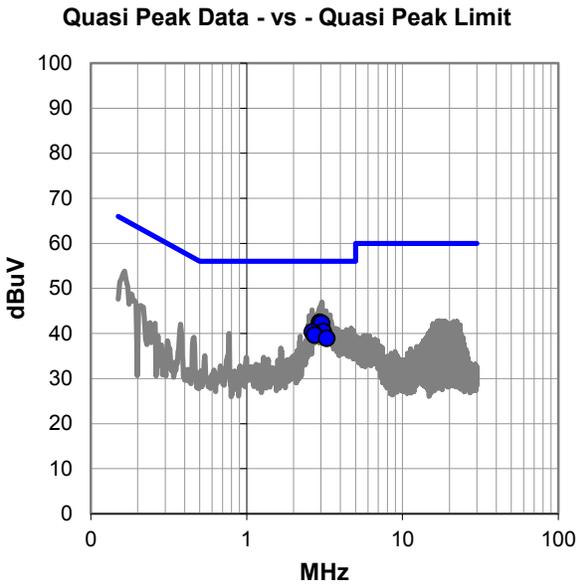
None

EUT OPERATING MODES

Continuously Transmitting at Chain B Low Channel @ 5745MHz, 6Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #39

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.950	22.5	19.9	42.4	56.0	-13.6
3.032	22.3	19.9	42.2	56.0	-13.8
3.107	20.5	19.9	40.4	56.0	-15.6
2.651	20.5	19.8	40.3	56.0	-15.7
2.729	19.8	19.8	39.6	56.0	-16.4
3.272	19.0	19.9	38.9	56.0	-17.1

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.950	15.3	19.9	35.2	46.0	-10.8
3.032	15.3	19.9	35.2	46.0	-10.8
2.729	13.7	19.8	33.5	46.0	-12.5
3.107	13.5	19.9	33.4	46.0	-12.6
3.272	13.5	19.9	33.4	46.0	-12.6
2.651	13.1	19.8	32.9	46.0	-13.1

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/29/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.5°C
Attendees:	None	Relative Humidity:	44.3%
Customer Project:	None	Bar. Pressure:	1016 mb
Tested By:	Frank Sun	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	VDEI0009-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	40	Line:	Neutral	Add. Ext. Attenuation (dB):	0
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COMMENTS

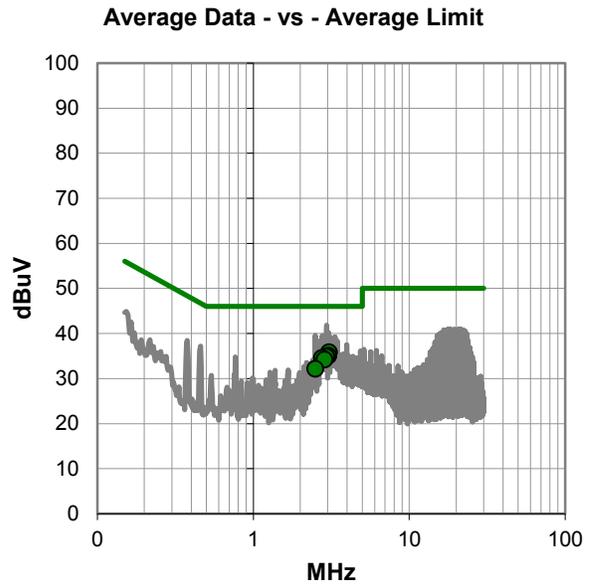
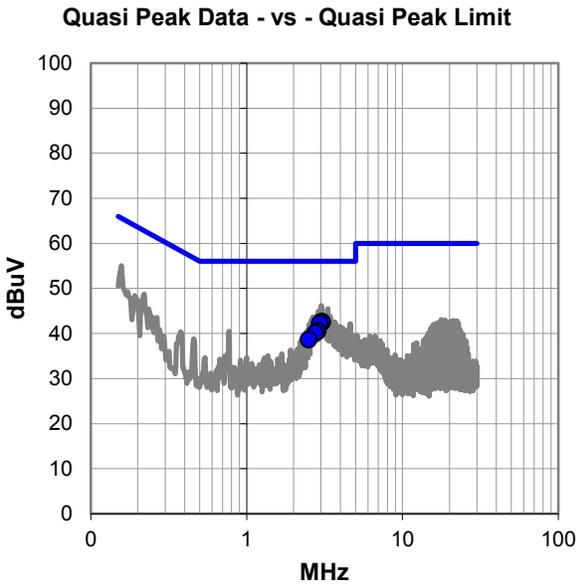
None

EUT OPERATING MODES

Continuously Transmitting at Chain B Low Channel @ 5745MHz, 6Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #40

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.034	22.7	19.9	42.6	56.0	-13.4
3.055	22.6	19.9	42.5	56.0	-13.5
2.951	22.3	19.9	42.2	56.0	-13.8
2.873	20.7	19.9	40.6	56.0	-15.4
2.761	20.3	19.8	40.1	56.0	-15.9
2.500	18.8	19.9	38.7	56.0	-17.4

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.055	15.9	19.9	35.8	46.0	-10.2
3.034	15.1	19.9	35.0	46.0	-11.0
2.951	14.9	19.9	34.8	46.0	-11.2
2.761	14.7	19.8	34.5	46.0	-11.5
2.873	14.3	19.9	34.2	46.0	-11.8
2.500	12.3	19.9	32.2	46.0	-13.9

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS



WTD 2015.09.03
PSA-ESCI 2015.03.03, EmRP5 2015.08.28

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/29/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.5°C
Attendees:	None	Relative Humidity:	44.3%
Customer Project:	None	Bar. Pressure:	1016 mb
Tested By:	Frank Sun	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	VDEI0009-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	41	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

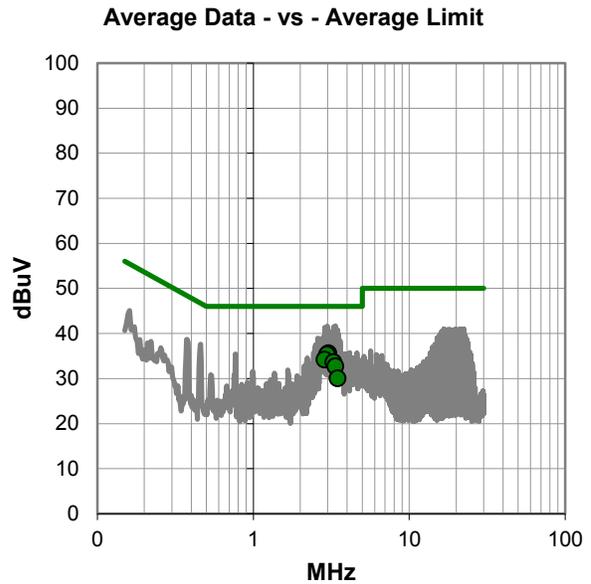
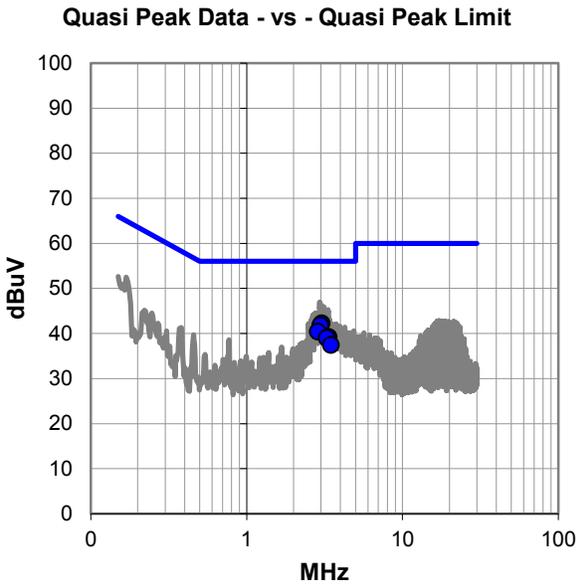
None

EUT OPERATING MODES

Continuously Transmitting at Chain B Mid Channel @ 5785MHz, 6Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #41

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.040	22.3	19.9	42.2	56.0	-13.8
2.973	21.9	19.9	41.8	56.0	-14.2
2.870	20.5	19.9	40.4	56.0	-15.6
3.361	19.3	19.9	39.2	56.0	-16.8
3.271	19.1	19.9	39.0	56.0	-17.0
3.476	17.5	19.9	37.4	56.0	-18.6

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.040	15.7	19.9	35.6	46.0	-10.4
2.973	15.4	19.9	35.3	46.0	-10.7
2.870	14.3	19.9	34.2	46.0	-11.8
3.271	13.7	19.9	33.6	46.0	-12.4
3.361	12.8	19.9	32.7	46.0	-13.3
3.476	10.1	19.9	30.0	46.0	-16.0

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS



WTD 2015.09.03
PSA-ESCI 2015.03.03, EmRP5 2015.08.28

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/29/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.5°C
Attendees:	None	Relative Humidity:	44.3%
Customer Project:	None	Bar. Pressure:	1016 mb
Tested By:	Frank Sun	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	VDEI0009-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	42	Line:	Neutral	Add. Ext. Attenuation (dB):	0
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COMMENTS

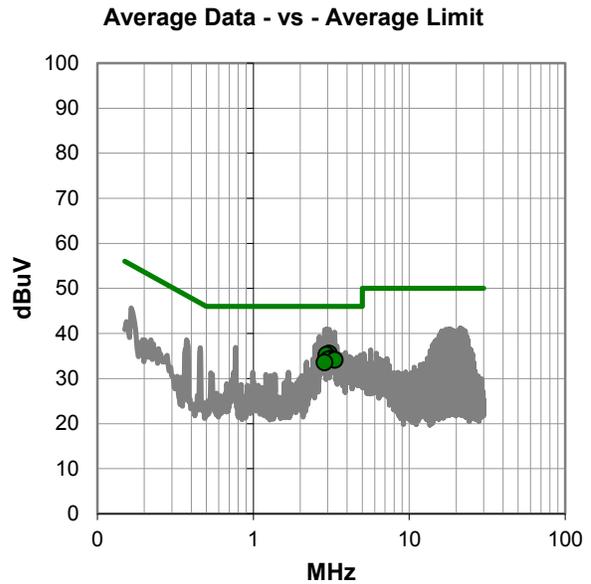
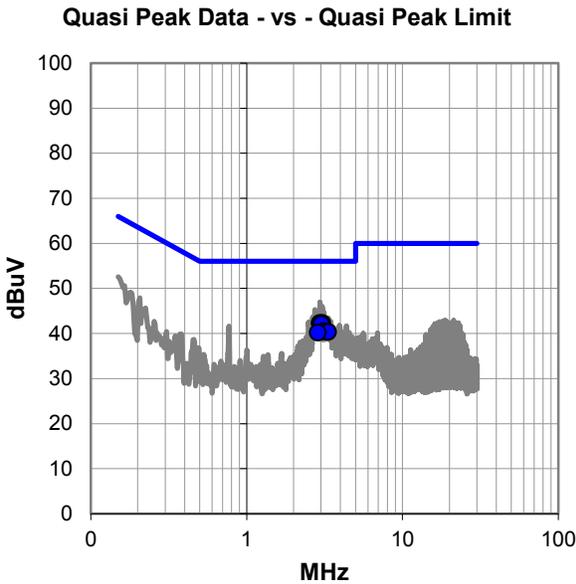
None

EUT OPERATING MODES

Continuously Transmitting at Chain B Mid Channel @ 5785MHz, 6Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #42

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.949	22.4	19.9	42.3	56.0	-13.7
3.056	22.4	19.9	42.3	56.0	-13.7
3.023	22.2	19.9	42.1	56.0	-13.9
3.137	20.6	19.9	40.5	56.0	-15.5
3.339	20.4	19.9	40.3	56.0	-15.7
2.862	20.3	19.9	40.2	56.0	-15.8

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.056	15.6	19.9	35.5	46.0	-10.5
2.949	15.3	19.9	35.2	46.0	-10.8
3.137	14.5	19.9	34.4	46.0	-11.6
3.023	14.3	19.9	34.2	46.0	-11.8
3.339	14.2	19.9	34.1	46.0	-11.9
2.862	13.7	19.9	33.6	46.0	-12.4

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS



WTD 2015.09.03
PSA-ESCI 2015.03.03, EmRP5 2015.08.28

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/29/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.5°C
Attendees:	None	Relative Humidity:	44.3%
Customer Project:	None	Bar. Pressure:	1016 mb
Tested By:	Frank Sun	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	VDEI0009-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	44	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

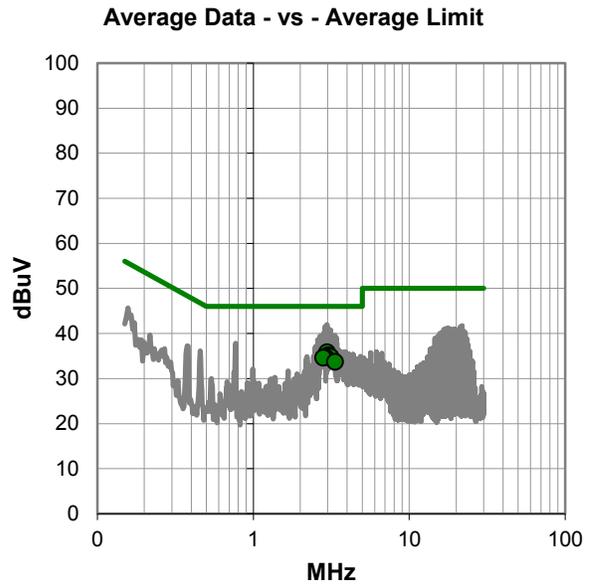
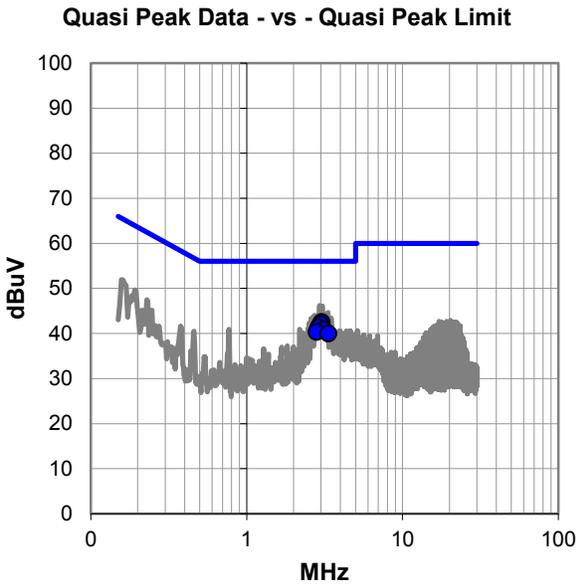
None

EUT OPERATING MODES

Continuously Transmitting at Chain B High Channel @ 5825MHz, 6Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #44

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.035	22.6	19.9	42.5	56.0	-13.5
2.971	22.1	19.9	42.0	56.0	-14.0
2.897	21.4	19.9	41.3	56.0	-14.7
3.135	20.9	19.9	40.8	56.0	-15.2
2.810	20.5	19.8	40.3	56.0	-15.7
3.354	20.1	19.9	40.0	56.0	-16.0

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.971	15.9	19.9	35.8	46.0	-10.2
3.035	15.2	19.9	35.1	46.0	-10.9
3.135	14.9	19.9	34.8	46.0	-11.2
2.897	14.9	19.9	34.8	46.0	-11.2
2.810	14.8	19.8	34.6	46.0	-11.4
3.354	13.8	19.9	33.7	46.0	-12.3

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/29/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.5°C
Attendees:	None	Relative Humidity:	44.3%
Customer Project:	None	Bar. Pressure:	1016 mb
Tested By:	Frank Sun	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	VDEI0009-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	45	Line:	Neutral	Add. Ext. Attenuation (dB):	0
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COMMENTS

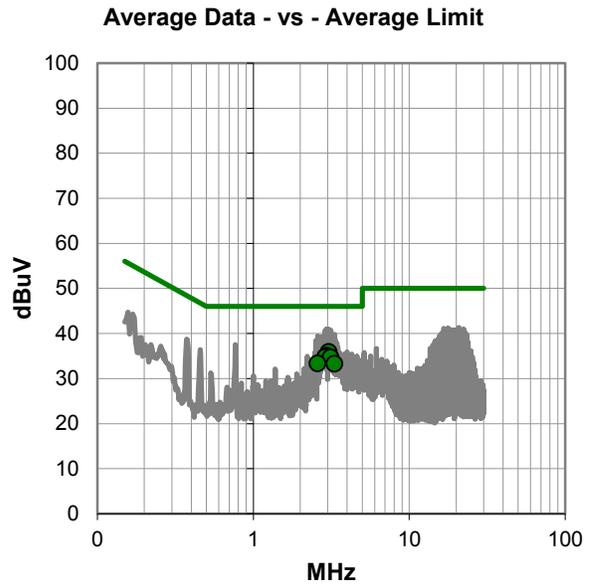
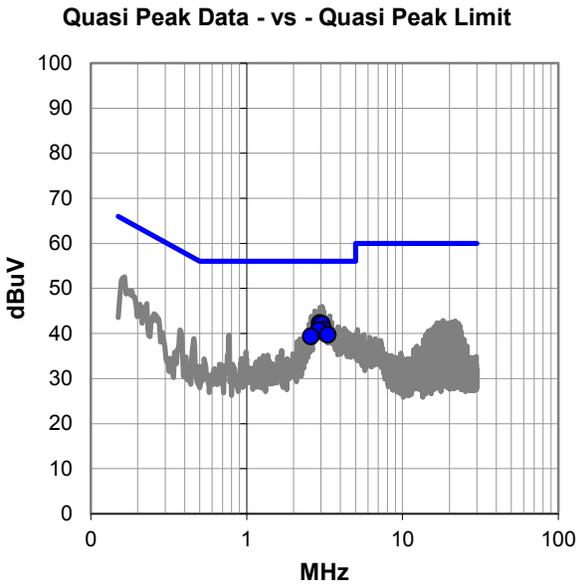
None

EUT OPERATING MODES

Continuously Transmitting at Chain B High Channel @ 5825MHz, 6Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #45

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.952	22.4	19.9	42.3	56.0	-13.7
3.053	22.2	19.9	42.1	56.0	-13.9
3.136	20.9	19.9	40.8	56.0	-15.2
2.891	20.8	19.9	40.7	56.0	-15.3
3.323	19.8	19.9	39.7	56.0	-16.3
2.589	19.5	19.8	39.3	56.0	-16.7

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.053	16.0	19.9	35.9	46.0	-10.1
2.952	15.1	19.9	35.0	46.0	-11.0
2.891	14.9	19.9	34.8	46.0	-11.2
3.136	14.8	19.9	34.7	46.0	-11.3
2.589	13.5	19.8	33.3	46.0	-12.7
3.323	13.4	19.9	33.3	46.0	-12.7

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS



WTD 2015.09.03
PSA-ESCI 2015.03.03, EmRP5 2015.08.28

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/29/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.5°C
Attendees:	None	Relative Humidity:	44.3%
Customer Project:	None	Bar. Pressure:	1016 mb
Tested By:	Frank Sun	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	VDEI0009-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	46	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

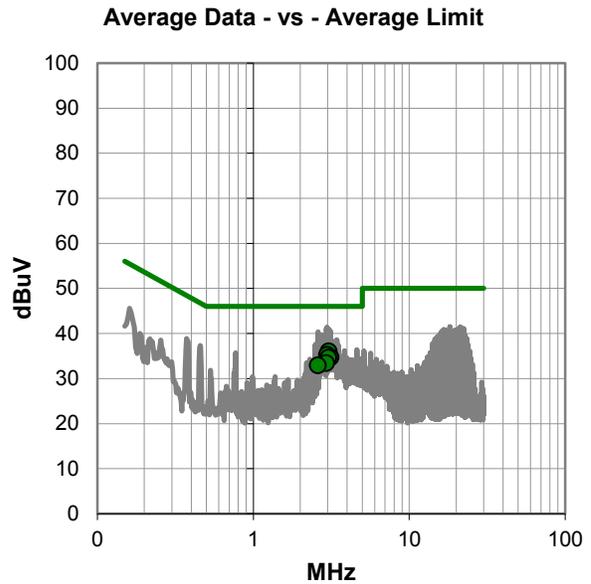
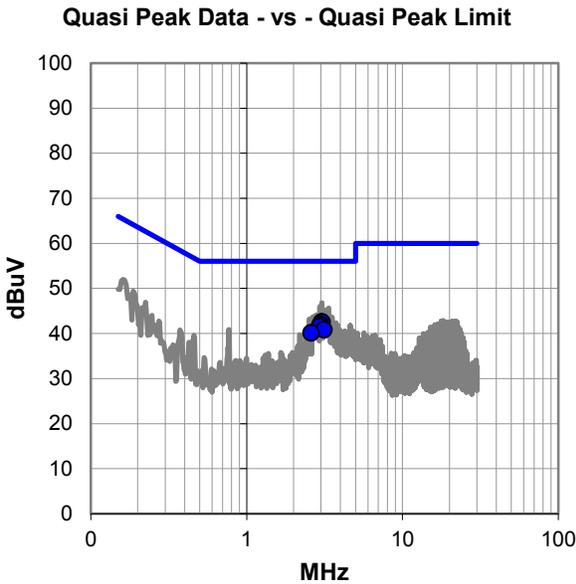
None

EUT OPERATING MODES

Continuously Transmitting at Chain C Low Channel @ 5745MHz, 6Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #46

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.029	22.6	19.9	42.5	56.0	-13.5
3.052	22.6	19.9	42.5	56.0	-13.5
2.973	22.0	19.9	41.9	56.0	-14.1
2.939	21.6	19.9	41.5	56.0	-14.5
3.135	20.9	19.9	40.8	56.0	-15.2
2.601	20.3	19.8	40.1	56.0	-15.9

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.052	16.1	19.9	36.0	46.0	-10.0
2.973	15.3	19.9	35.2	46.0	-10.8
3.135	14.8	19.9	34.7	46.0	-11.3
3.029	14.7	19.9	34.6	46.0	-11.4
2.939	13.5	19.9	33.4	46.0	-12.6
2.601	13.1	19.8	32.9	46.0	-13.1

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS



WTD 2015.09.03
PSA-ESCI 2015.03.03, EmRP5 2015.08.28

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/29/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.5°C
Attendees:	None	Relative Humidity:	44.3%
Customer Project:	None	Bar. Pressure:	1016 mb
Tested By:	Frank Sun	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	VDEI0009-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	47	Line:	Neutral	Add. Ext. Attenuation (dB):	0
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COMMENTS

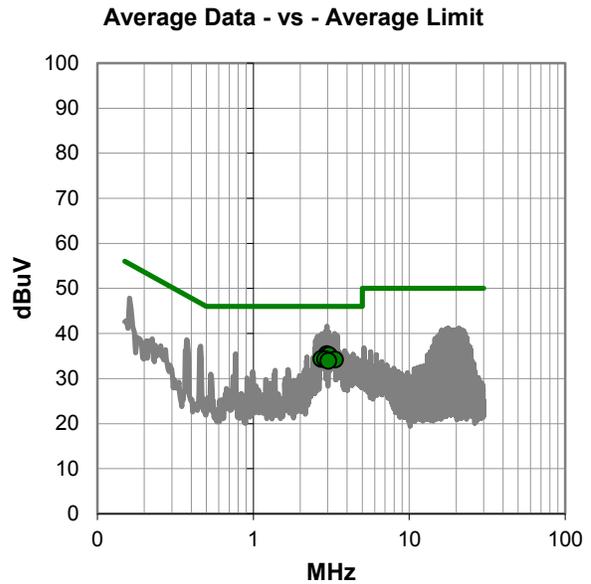
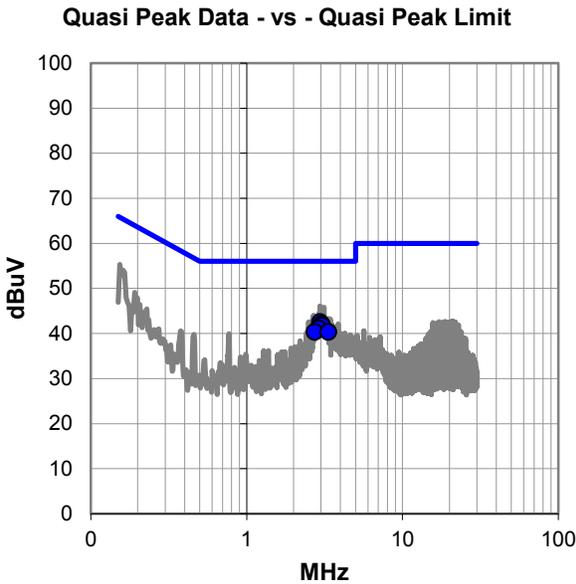
None

EUT OPERATING MODES

Continuously Transmitting at Chain C Low Channel @ 5745MHz, 6Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #47

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.958	22.6	19.9	42.5	56.0	-13.5
3.028	22.1	19.9	42.0	56.0	-14.0
3.062	21.8	19.9	41.7	56.0	-14.3
2.901	21.2	19.9	41.1	56.0	-14.9
2.733	20.5	19.8	40.3	56.0	-15.7
3.341	20.4	19.9	40.3	56.0	-15.7

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.958	15.5	19.9	35.4	46.0	-10.6
3.062	15.3	19.9	35.2	46.0	-10.8
2.733	14.5	19.8	34.3	46.0	-11.7
2.901	14.4	19.9	34.3	46.0	-11.7
3.341	14.3	19.9	34.2	46.0	-11.8
3.028	14.0	19.9	33.9	46.0	-12.1

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS



WTD 2015.09.03
PSA-ESCI 2015.03.03, EmRP5 2015.08.28

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/29/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.5°C
Attendees:	None	Relative Humidity:	44.3%
Customer Project:	None	Bar. Pressure:	1016 mb
Tested By:	Frank Sun	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	VDEI0009-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	48	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

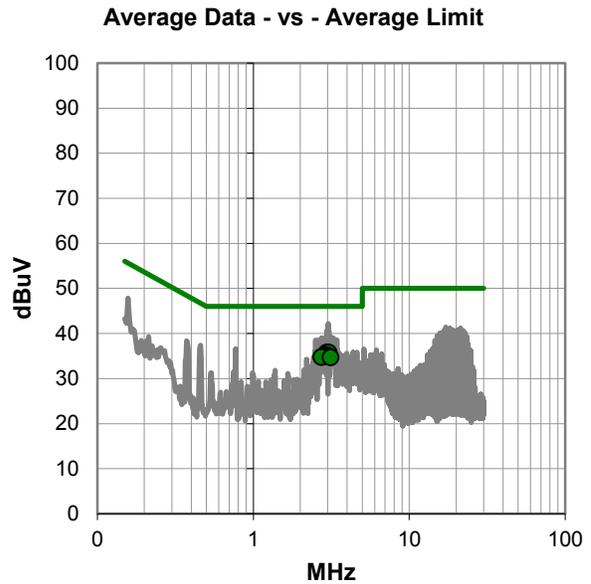
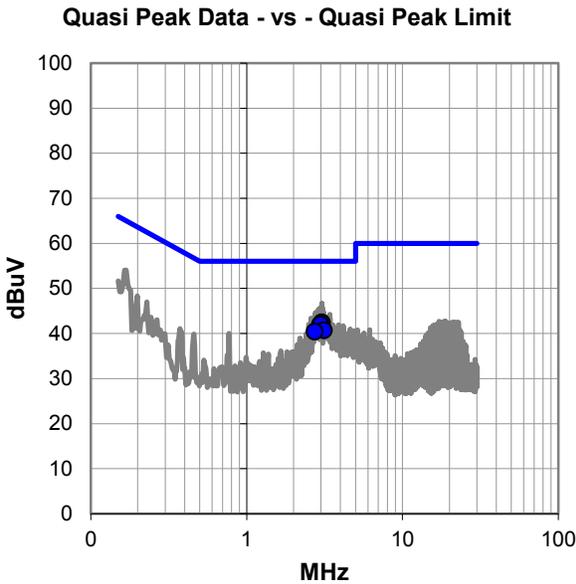
None

EUT OPERATING MODES

Continuously Transmitting at Chain C Mid Channel @ 5785MHz, 6Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #48

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.030	22.5	19.9	42.4	56.0	-13.6
3.054	22.4	19.9	42.3	56.0	-13.7
2.964	22.0	19.9	41.9	56.0	-14.1
2.973	22.0	19.9	41.9	56.0	-14.1
3.135	20.8	19.9	40.7	56.0	-15.3
2.735	20.6	19.8	40.4	56.0	-15.6

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.964	15.8	19.9	35.7	46.0	-10.3
3.054	15.8	19.9	35.7	46.0	-10.3
2.973	15.2	19.9	35.1	46.0	-10.9
3.030	15.0	19.9	34.9	46.0	-11.1
2.735	14.9	19.8	34.7	46.0	-11.3
3.135	14.8	19.9	34.7	46.0	-11.3

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS



WTD 2015.09.03
PSA-ESCI 2015.03.03, EmRP5 2015.08.28

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/29/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.5°C
Attendees:	None	Relative Humidity:	44.3%
Customer Project:	None	Bar. Pressure:	1016 mb
Tested By:	Frank Sun	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	VDEI0009-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	49	Line:	Neutral	Add. Ext. Attenuation (dB):	0
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COMMENTS

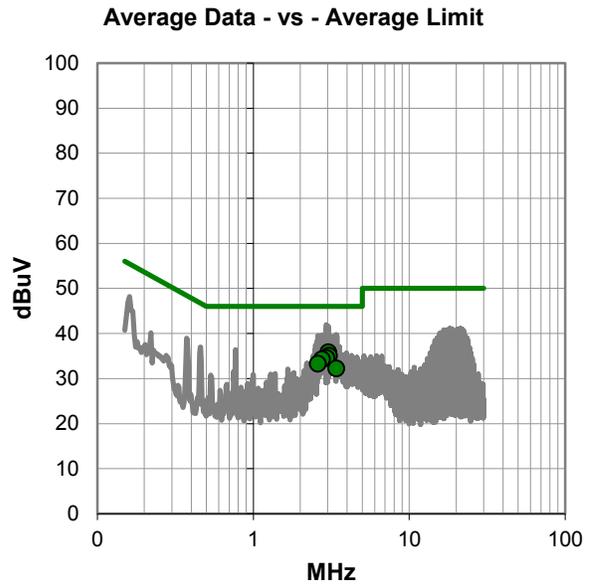
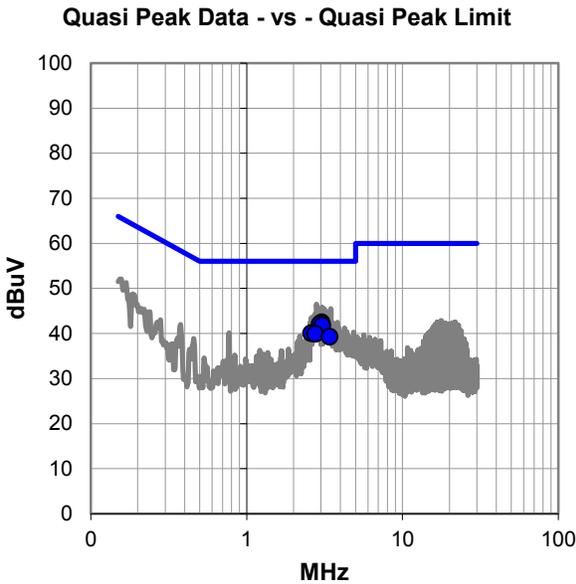
None

EUT OPERATING MODES

Continuously Transmitting at Chain C Mid Channel @ 5785MHz, 6Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #49

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.039	22.5	19.9	42.4	56.0	-13.6
2.947	22.2	19.9	42.1	56.0	-13.9
3.062	21.9	19.9	41.8	56.0	-14.2
2.598	20.2	19.8	40.0	56.0	-16.0
2.762	20.1	19.8	39.9	56.0	-16.1
3.405	19.4	19.9	39.3	56.0	-16.7

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.039	15.9	19.9	35.8	46.0	-10.2
3.062	15.1	19.9	35.0	46.0	-11.0
2.947	14.6	19.9	34.5	46.0	-11.5
2.762	14.4	19.8	34.2	46.0	-11.8
2.598	13.4	19.8	33.2	46.0	-12.8
3.405	12.3	19.9	32.2	46.0	-13.8

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS



WTD 2015.09.03
PSA-ESCI 2015.03.03, EmRP5 2015.08.28

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/29/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.5°C
Attendees:	None	Relative Humidity:	44.3%
Customer Project:	None	Bar. Pressure:	1016 mb
Tested By:	Frank Sun	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	VDEI0009-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	50	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

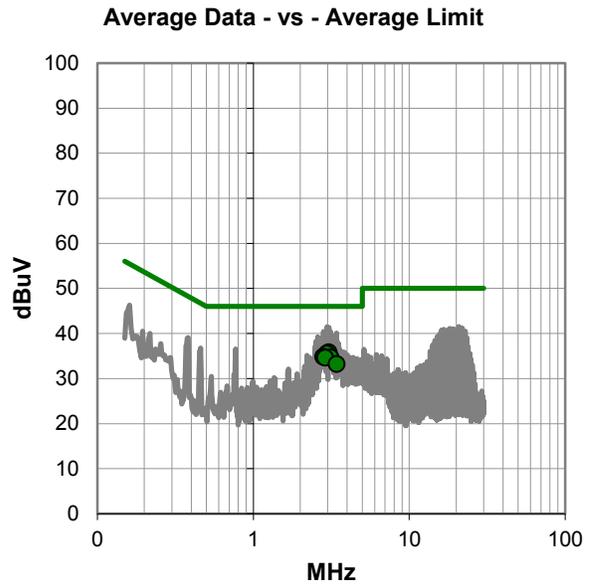
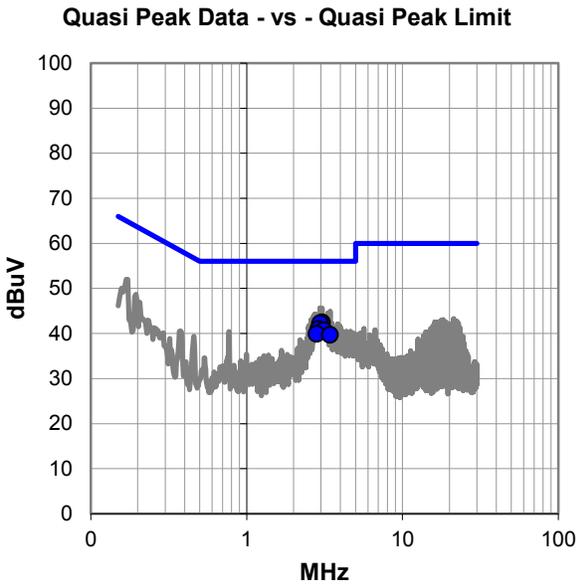
None

EUT OPERATING MODES

Continuously Transmitting at Chain C High Channel @ 5825MHz, 6Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #50

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.051	22.5	19.9	42.4	56.0	-13.6
2.967	22.3	19.9	42.2	56.0	-13.8
2.894	21.1	19.9	41.0	56.0	-15.0
3.137	20.8	19.9	40.7	56.0	-15.3
2.819	20.1	19.8	39.9	56.0	-16.1
3.420	19.8	19.9	39.7	56.0	-16.3

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.051	15.9	19.9	35.8	46.0	-10.2
2.967	15.6	19.9	35.5	46.0	-10.5
2.819	15.0	19.8	34.8	46.0	-11.2
3.137	14.8	19.9	34.7	46.0	-11.3
2.894	14.7	19.9	34.6	46.0	-11.4
3.420	13.3	19.9	33.2	46.0	-12.8

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS



WTD 2015.09.03
PSA-ESCI 2015.03.03, EmRP5 2015.08.28

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF02717-B385	Date:	09/29/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.5°C
Attendees:	None	Relative Humidity:	44.3%
Customer Project:	None	Bar. Pressure:	1016 mb
Tested By:	Frank Sun	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	VDEI0009-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	51	Line:	Neutral	Add. Ext. Attenuation (dB):	0
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COMMENTS

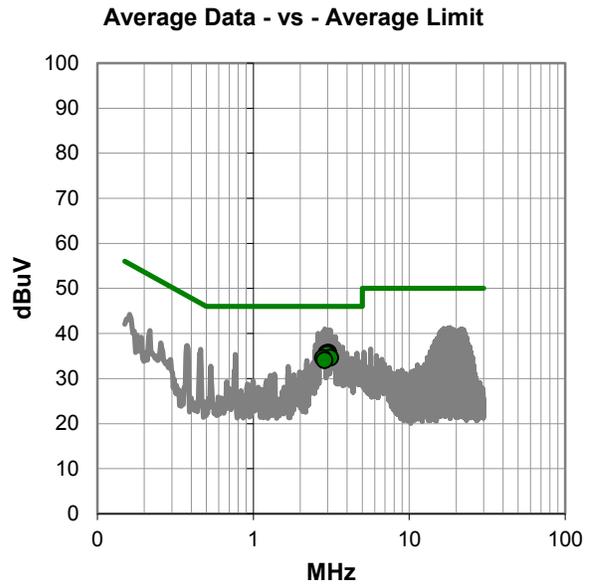
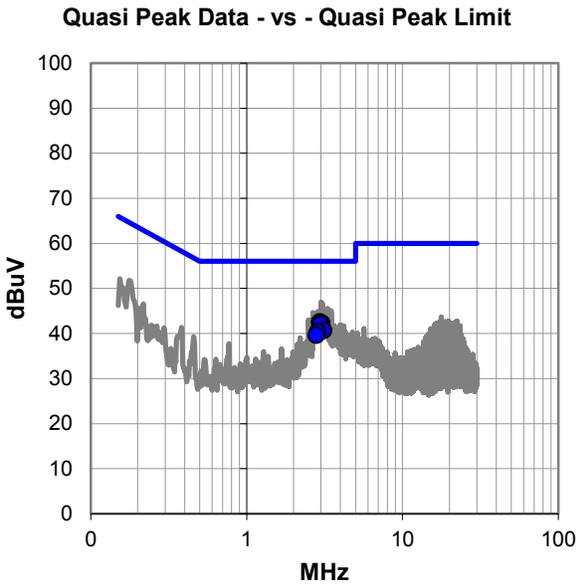
None

EUT OPERATING MODES

Continuously Transmitting at Chain C High Channel @ 5825MHz, 6Mbps

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #51

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.953	22.6	19.9	42.5	56.0	-13.5
3.038	22.4	19.9	42.3	56.0	-13.7
2.973	22.1	19.9	42.0	56.0	-14.0
3.123	20.8	19.9	40.7	56.0	-15.3
2.869	20.5	19.9	40.4	56.0	-15.6
2.805	19.8	19.8	39.6	56.0	-16.4

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.038	15.8	19.9	35.7	46.0	-10.3
2.953	15.7	19.9	35.6	46.0	-10.4
2.973	15.5	19.9	35.4	46.0	-10.6
3.123	14.7	19.9	34.6	46.0	-11.4
2.805	14.7	19.8	34.5	46.0	-11.5
2.869	14.2	19.9	34.1	46.0	-11.9

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS



WTD: 2015.09.03
PSA-ESCI 2015.07.01, EmIR5 2015.08.28

TEST DESCRIPTION

The EUT will be powered either directly or indirectly from the AC power line. Therefore, conducted emissions measurements were made on the AC input of the EUT, or on the AC input of the device used to power the EUT. The AC power line conducted emissions were measured with the EUT operating at the lowest, the highest, and a middle channel in the operational band. The EUT was transmitting at its maximum data rate. For each mode, the spectrum was scanned from 150 kHz to 30 MHz. The test setup and procedures were in accordance with ANSI C63.10.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Receiver	Rohde & Schwarz	ESCI	ARG	6/1/2015	6/1/2016
LISN	Solar Electronics	9252-50-24-BNC	LIA	3/4/2015	3/4/2016
LISN	Solar Electronics	9252-50-24-BNC	LIB	1/29/2015	1/29/2016
Cable - Conducted Cable Assembly	Northwest EMC	OCP, HFP, AWC	OCPA	4/10/2015	4/10/2016

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	2.4 dB	-2.4 dB

CONFIGURATIONS INVESTIGATED

VDEI0009-7

MODES INVESTIGATED

Continuous Transmit 802.11an/ac: Low Channel 149 (5745MHz) Chain B
Continuous Transmit 802.11an/ac: High Channel 161 (5785MHz) Chain C
Continuous Transmit 802.11an/ac: High Channel 48 (5240MHz) Chain B
Continuous Transmit 802.11an/ac: Low Channel 36 (5180MHz) Chain A

POWERLINE CONDUCTED EMISSIONS

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF00069-3EB6	Date:	10/27/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	22°C
Attendees:	None	Relative Humidity:	44.4%
Customer Project:	None	Bar. Pressure:	1011 mb
Tested By:	Mark Baytan	Job Site:	OC06
Power:	110VAC/60Hz	Configuration:	VDEI0009-7

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	7	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

None

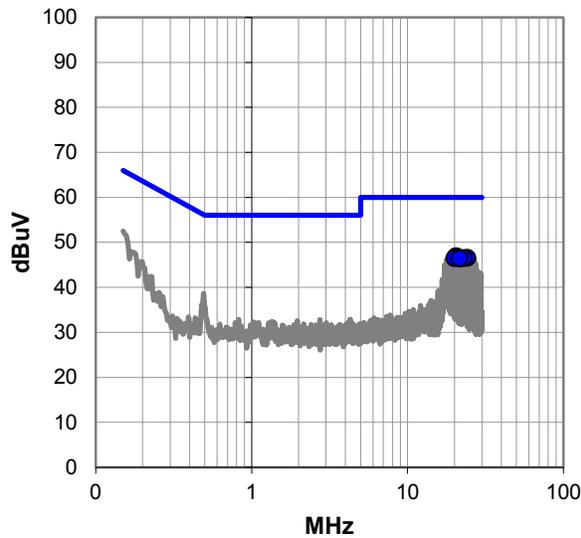
EUT OPERATING MODES

Continuous Transmit 802.11an/ac: Low Channel 36 (5180MHz) Chain A

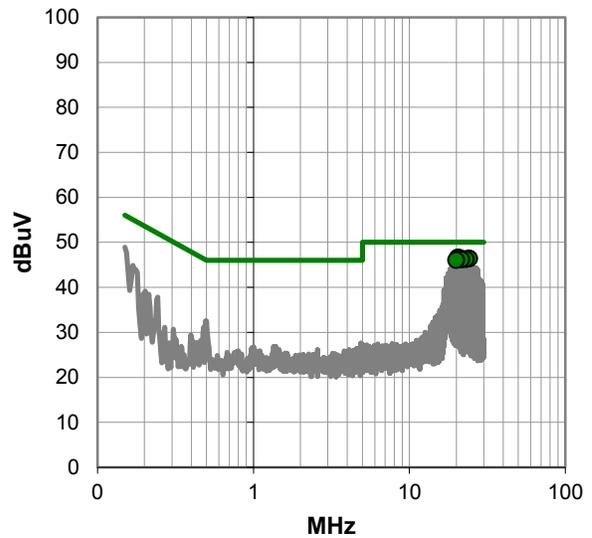
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #7

Quasi Peak Data - vs - Quasi Peak Limit

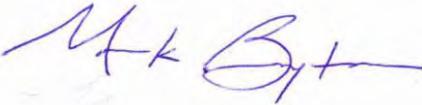
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
20.503	25.8	21.1	46.9	60.0	-13.1
21.008	25.6	21.2	46.8	60.0	-13.2
24.299	25.1	21.4	46.5	60.0	-13.5
23.033	25.2	21.3	46.5	60.0	-13.5
19.996	25.4	21.1	46.5	60.0	-13.5
21.515	25.2	21.2	46.4	60.0	-13.6

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
20.503	25.5	21.1	46.6	50.0	-3.4
21.008	25.4	21.2	46.6	50.0	-3.4
24.299	25.0	21.4	46.4	50.0	-3.6
23.033	25.0	21.3	46.3	50.0	-3.7
21.515	25.0	21.2	46.2	50.0	-3.8
19.996	25.0	21.1	46.1	50.0	-3.9

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF00069-3EB6	Date:	10/27/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	22°C
Attendees:	None	Relative Humidity:	44.4%
Customer Project:	None	Bar. Pressure:	1011 mb
Tested By:	Mark Baytan	Job Site:	OC06
Power:	110VAC/60Hz	Configuration:	VDEI0009-7

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	8	Line:	Neutral	Add. Ext. Attenuation (dB):	0
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COMMENTS

None

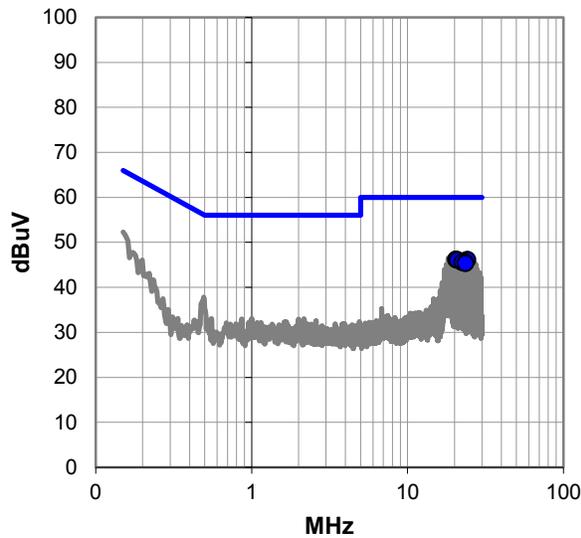
EUT OPERATING MODES

Continuous Transmit 802.11an/ac: Low Channel 36 (5180MHz) Chain A

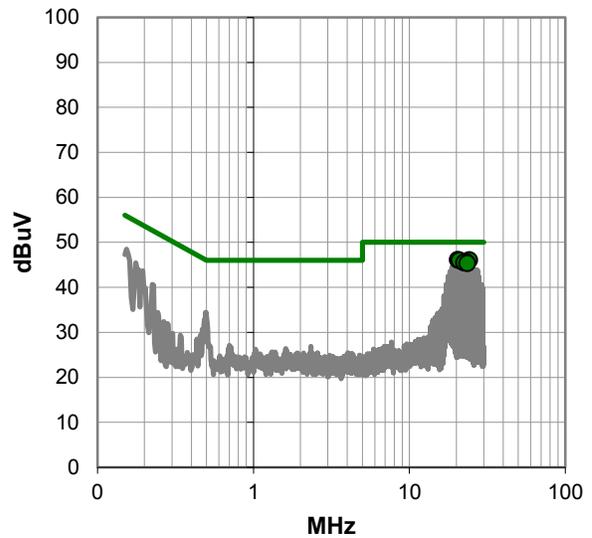
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #8

Quasi Peak Data - vs - Quasi Peak Limit

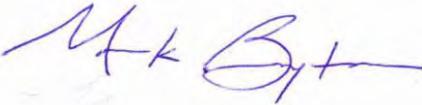
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
20.502	25.1	21.1	46.2	60.0	-13.8
24.299	24.7	21.4	46.1	60.0	-13.9
21.008	24.9	21.2	46.1	60.0	-13.9
23.034	24.5	21.3	45.8	60.0	-14.2
22.526	24.3	21.3	45.6	60.0	-14.4
23.539	24.0	21.3	45.3	60.0	-14.7

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
20.502	25.0	21.1	46.1	50.0	-3.9
24.299	24.6	21.4	46.0	50.0	-4.0
21.008	24.8	21.2	46.0	50.0	-4.0
23.034	24.4	21.3	45.7	50.0	-4.3
22.526	24.2	21.3	45.5	50.0	-4.5
23.539	24.0	21.3	45.3	50.0	-4.7

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF00069-3EB6	Date:	10/27/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	22°C
Attendees:	None	Relative Humidity:	44.4%
Customer Project:	None	Bar. Pressure:	1011 mb
Tested By:	Mark Baytan	Job Site:	OC06
Power:	110VAC/60Hz	Configuration:	VDEI0009-7

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	9	Line:	Neutral	Add. Ext. Attenuation (dB):	0
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COMMENTS

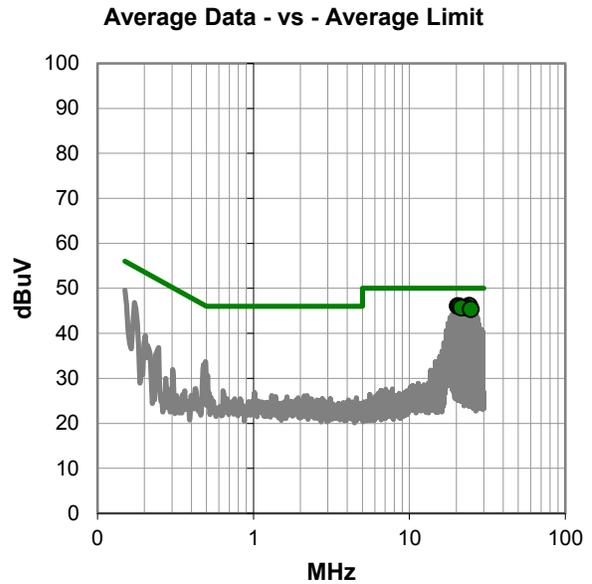
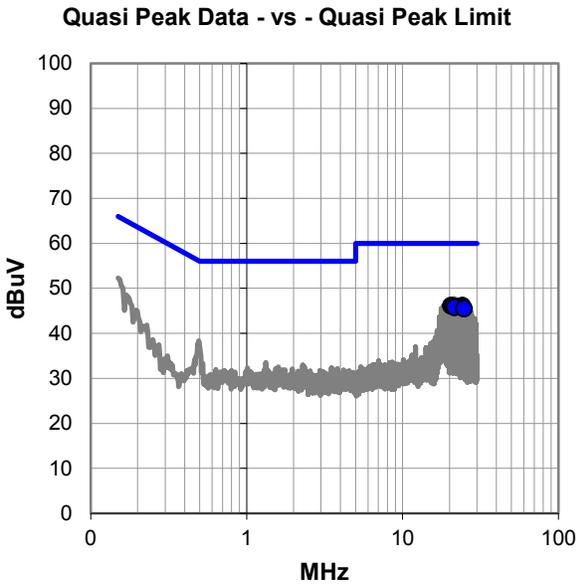
None

EUT OPERATING MODES

Continuous Transmit 802.11n/ac: High Channel 48 (5240MHz) Chain B

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #9

Quasi Peak Data - vs - Quasi Peak Limit

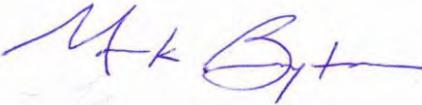
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
24.299	24.7	21.4	46.1	60.0	-13.9
20.503	25.0	21.1	46.1	60.0	-13.9
21.009	24.9	21.2	46.1	60.0	-13.9
23.034	24.6	21.3	45.9	60.0	-14.1
21.515	24.6	21.2	45.8	60.0	-14.2
24.806	24.0	21.5	45.5	60.0	-14.5

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
24.299	24.7	21.4	46.1	50.0	-3.9
20.503	24.9	21.1	46.0	50.0	-4.0
21.009	24.8	21.2	46.0	50.0	-4.0
23.034	24.5	21.3	45.8	50.0	-4.2
21.515	24.5	21.2	45.7	50.0	-4.3
24.806	23.9	21.5	45.4	50.0	-4.6

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF00069-3EB6	Date:	10/27/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	22°C
Attendees:	None	Relative Humidity:	44.4%
Customer Project:	None	Bar. Pressure:	1011 mb
Tested By:	Mark Baytan	Job Site:	OC06
Power:	110VAC/60Hz	Configuration:	VDEI0009-7

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	10	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

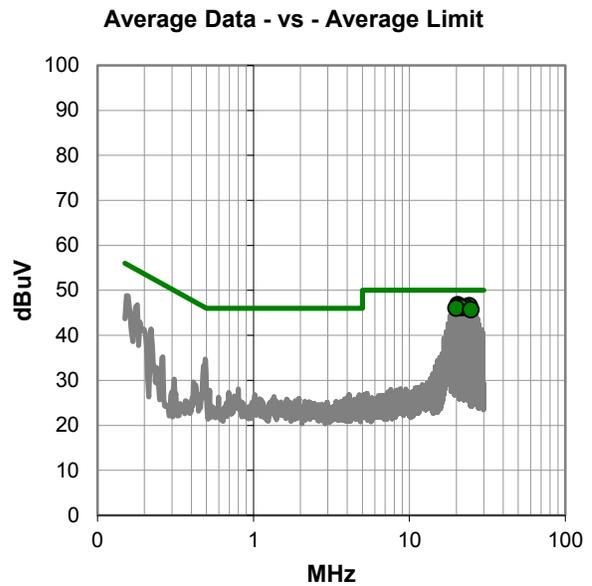
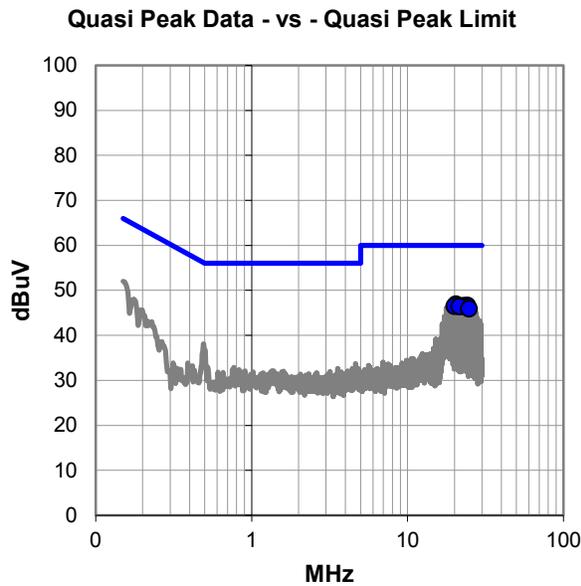
None

EUT OPERATING MODES

Continuous Transmit 802.11n/ac: High Channel 48 (5240MHz) Chain B

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #10

Quasi Peak Data - vs - Quasi Peak Limit

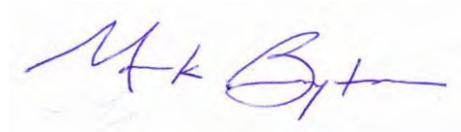
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
20.503	25.8	21.1	46.9	60.0	-13.1
24.300	25.2	21.4	46.6	60.0	-13.4
21.010	25.4	21.2	46.6	60.0	-13.4
23.034	25.2	21.3	46.5	60.0	-13.5
19.995	25.4	21.1	46.5	60.0	-13.5
21.515	25.2	21.2	46.4	60.0	-13.6
24.804	24.4	21.5	45.9	60.0	-14.1

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
20.503	25.6	21.1	46.7	50.0	-3.3
24.300	25.1	21.4	46.5	50.0	-3.5
21.010	25.2	21.2	46.4	50.0	-3.6
23.034	25.0	21.3	46.3	50.0	-3.7
21.515	25.0	21.2	46.2	50.0	-3.8
19.995	25.0	21.1	46.1	50.0	-3.9
24.804	24.2	21.5	45.7	50.0	-4.3

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF00069-3EB6	Date:	10/27/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	22°C
Attendees:	None	Relative Humidity:	44.4%
Customer Project:	None	Bar. Pressure:	1011 mb
Tested By:	Mark Baytan	Job Site:	OC06
Power:	110VAC/60Hz	Configuration:	VDEI0009-7

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	11	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

None

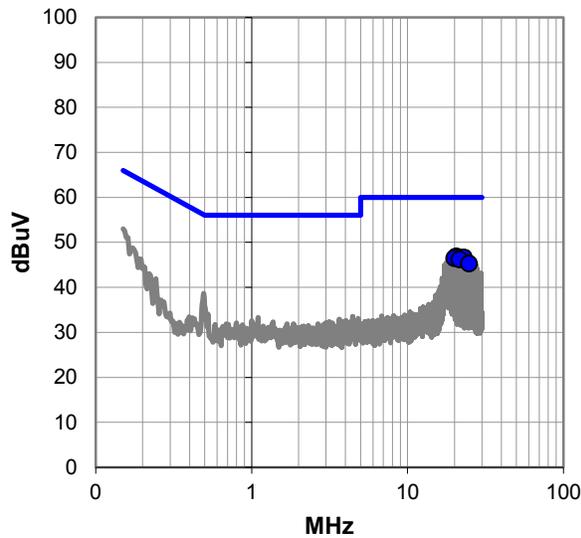
EUT OPERATING MODES

Continuous Transmit 802.11an/ac: Low Channel 149 (5745MHz) Chain B

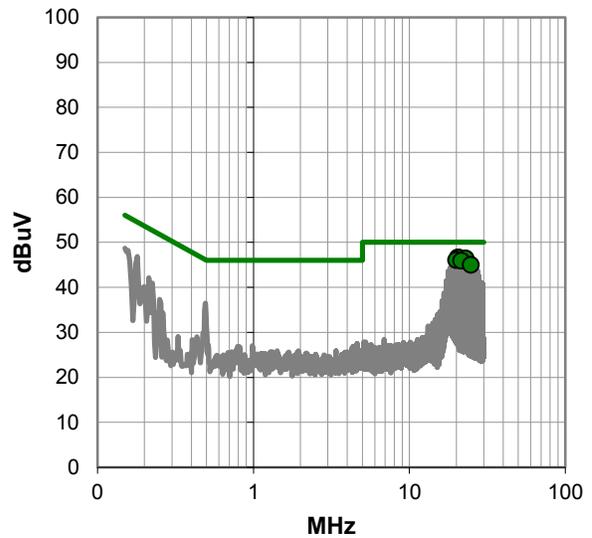
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #11

Quasi Peak Data - vs - Quasi Peak Limit

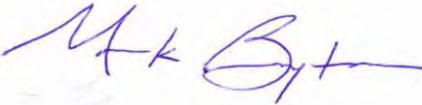
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
20.503	25.7	21.1	46.8	60.0	-13.2
21.008	25.6	21.2	46.8	60.0	-13.2
23.034	25.3	21.3	46.6	60.0	-13.4
19.996	25.4	21.1	46.5	60.0	-13.5
21.514	25.0	21.2	46.2	60.0	-13.8
24.805	23.8	21.5	45.3	60.0	-14.7

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
20.503	25.5	21.1	46.6	50.0	-3.4
21.008	25.4	21.2	46.6	50.0	-3.4
23.034	25.1	21.3	46.4	50.0	-3.6
19.996	25.0	21.1	46.1	50.0	-3.9
21.514	24.7	21.2	45.9	50.0	-4.1
24.805	23.5	21.5	45.0	50.0	-5.0

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF00069-3EB6	Date:	10/27/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	22°C
Attendees:	None	Relative Humidity:	44.4%
Customer Project:	None	Bar. Pressure:	1011 mb
Tested By:	Mark Baytan	Job Site:	OC06
Power:	110VAC/60Hz	Configuration:	VDEI0009-7

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	12	Line:	Neutral	Add. Ext. Attenuation (dB):	0
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COMMENTS

None

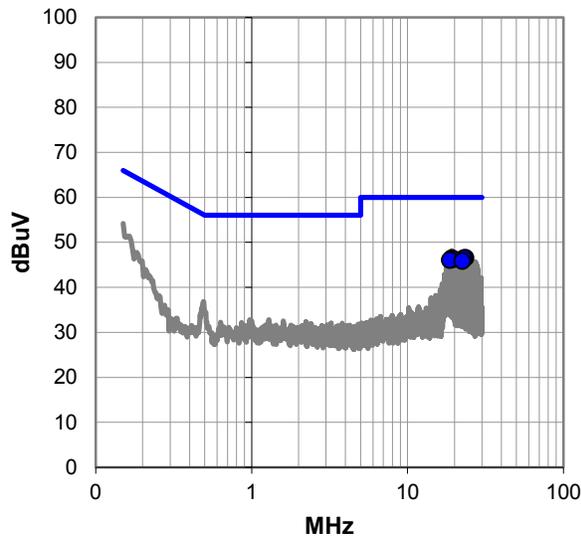
EUT OPERATING MODES

Continuous Transmit 802.11an/ac: Low Channel 149 (5745MHz) Chain B

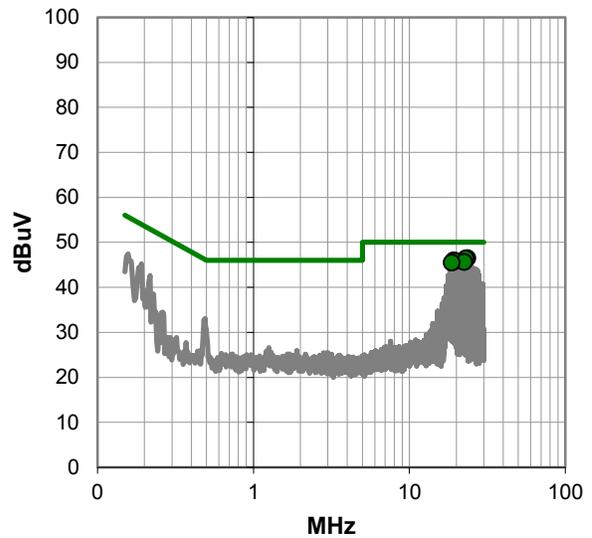
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #12

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
23.542	25.2	21.3	46.5	60.0	-13.5
19.238	25.5	21.0	46.5	60.0	-13.5
23.035	25.2	21.3	46.5	60.0	-13.5
19.744	25.2	21.0	46.2	60.0	-13.8
18.732	25.1	21.0	46.1	60.0	-13.9
22.528	24.6	21.3	45.9	60.0	-14.1

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
23.542	25.1	21.3	46.4	50.0	-3.6
23.035	25.1	21.3	46.4	50.0	-3.6
19.238	25.0	21.0	46.0	50.0	-4.0
19.744	24.8	21.0	45.8	50.0	-4.2
22.528	24.4	21.3	45.7	50.0	-4.3
18.732	24.5	21.0	45.5	50.0	-4.5

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF00069-3EB6	Date:	10/27/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	22°C
Attendees:	None	Relative Humidity:	44.4%
Customer Project:	None	Bar. Pressure:	1011 mb
Tested By:	Mark Baytan	Job Site:	OC06
Power:	110VAC/60Hz	Configuration:	VDEI0009-7

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	13	Line:	Neutral	Add. Ext. Attenuation (dB):	0
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COMMENTS

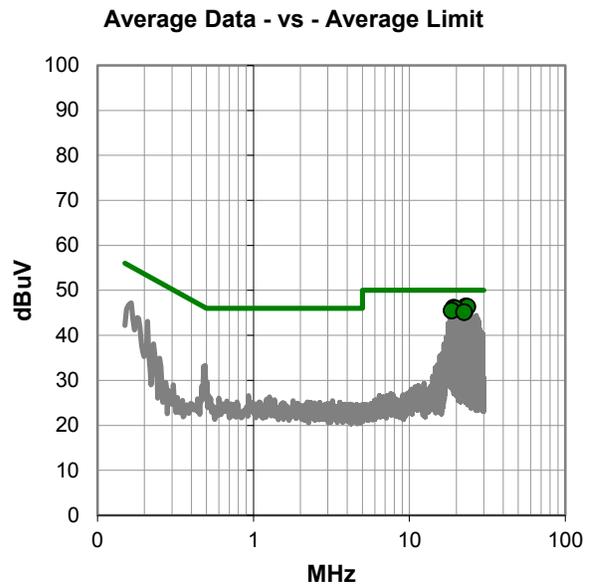
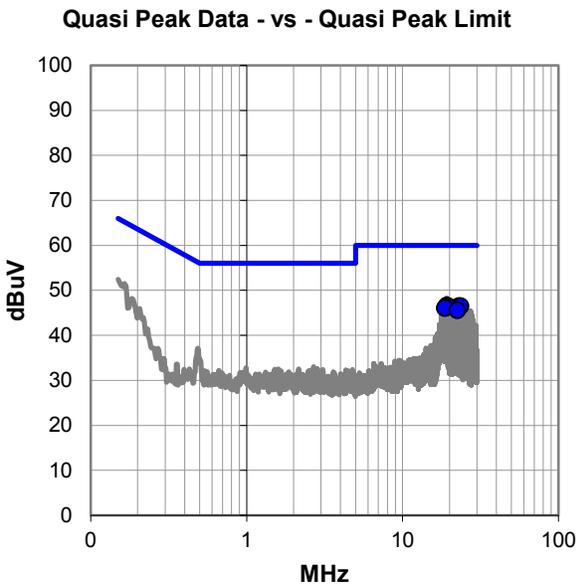
None

EUT OPERATING MODES

Continuous Transmit 802.11n/ac: High Channel 161 (5785MHz) Chain C

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #13

Quasi Peak Data - vs - Quasi Peak Limit

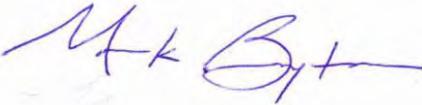
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
19.239	25.6	21.0	46.6	60.0	-13.4
23.037	25.2	21.3	46.5	60.0	-13.5
23.544	25.1	21.3	46.4	60.0	-13.6
19.746	25.3	21.0	46.3	60.0	-13.7
18.733	25.1	21.0	46.1	60.0	-13.9
22.531	24.3	21.3	45.6	60.0	-14.4

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
23.037	25.1	21.3	46.4	50.0	-3.6
23.544	25.0	21.3	46.3	50.0	-3.7
19.239	25.1	21.0	46.1	50.0	-3.9
19.746	24.9	21.0	45.9	50.0	-4.1
18.733	24.5	21.0	45.5	50.0	-4.5
22.531	23.9	21.3	45.2	50.0	-4.8

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF00069-3EB6	Date:	10/27/2015
Customer:	WatchGuard Technologies, Inc.	Temperature:	22°C
Attendees:	None	Relative Humidity:	44.4%
Customer Project:	None	Bar. Pressure:	1011 mb
Tested By:	Mark Baytan	Job Site:	OC06
Power:	110VAC/60Hz	Configuration:	VDEI0009-7

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	14	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

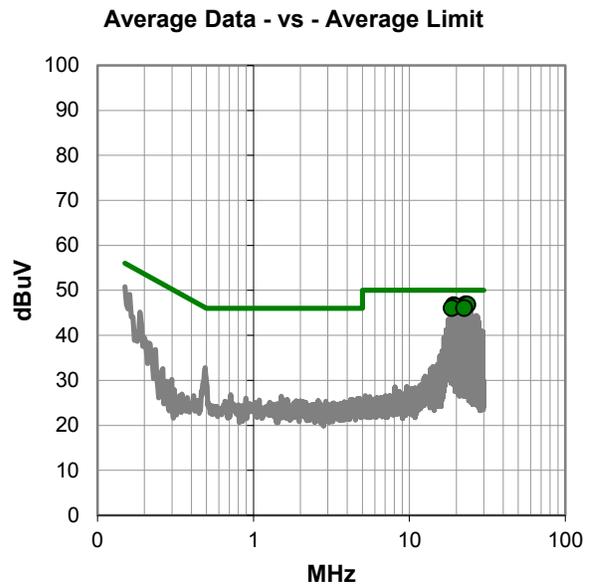
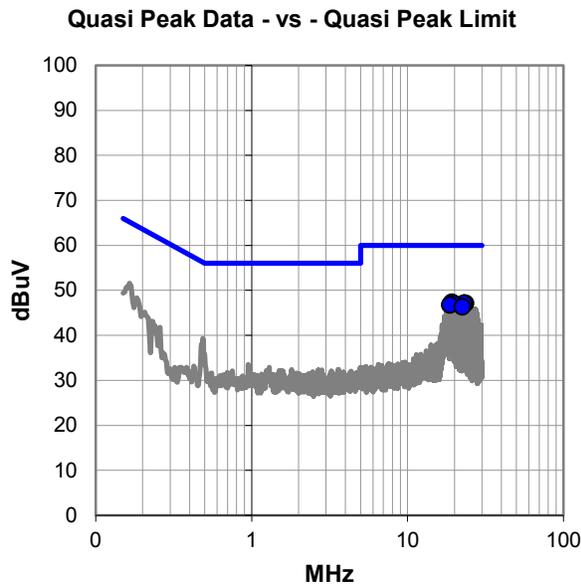
None

EUT OPERATING MODES

Continuous Transmit 802.11n/ac: High Channel 161 (5785MHz) Chain C

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #14

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
19.240	26.3	21.0	47.3	60.0	-12.7
23.543	25.8	21.3	47.1	60.0	-12.9
23.037	25.8	21.3	47.1	60.0	-12.9
19.745	26.0	21.0	47.0	60.0	-13.0
18.733	25.8	21.0	46.8	60.0	-13.2
22.530	25.1	21.3	46.4	60.0	-13.6

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
23.037	25.6	21.3	46.9	50.0	-3.1
23.543	25.5	21.3	46.8	50.0	-3.2
19.240	25.7	21.0	46.7	50.0	-3.3
19.745	25.4	21.0	46.4	50.0	-3.6
18.733	25.1	21.0	46.1	50.0	-3.9
22.530	24.8	21.3	46.1	50.0	-3.9

CONCLUSION

Pass



Tested By

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. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Continuously Transmitting

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

VDEI0009 - 4

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	27500 MHz
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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
Antenna - Biconilog	ETS Lindgren	3143B	AYF	4/7/2014	24 mo
Amplifier - Pre-Amplifier	Miteq	AM-1551	PAH	9/18/2015	12 mo
Cable	Northwest EMC	RE 9kHz - 1GHz	TXB	9/18/2015	12 mo
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	1/28/2015	12 mo
Filter - Low Pass	Micro-Tronics	LPM50004	HHV	8/11/2015	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AJL	9/15/2014	24 mo
Cable	Northwest EMC	1-8.2 GHz	TXC	9/18/2015	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAJ	9/18/2015	12 mo
Attenuator	Fairview Microwave	SA18H-20	TKQ	NCR	0 mo
Filter - High Pass	Micro-Tronics	HPM50111	HHX	8/11/2015	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AJF	NCR	0 mo
Cable	Northwest EMC	8-18GHz	TXD	10/27/2014	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	PAK	10/27/2014	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AJG	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	PAL	10/27/2014	12 mo
Antenna - Double Ridge	A.H. Systems, Inc.	SAS-574	AXW	4/23/2014	24 mo
Cable	Northwest EMC	18-40GHz	TXE	11/21/2014	12 mo
Amplifier - Pre-Amplifier	Miteq	JSDQK42-18004000-60-5P	PAM	11/21/2014	12 mo
Filter - Band Pass/Notch	Micro-Tronics	BRC50705	HHS	8/11/2015	12 mo
Filter - Band Pass/Notch	Micro-Tronics	BRC50703	HHQ	8/10/2015	12 mo

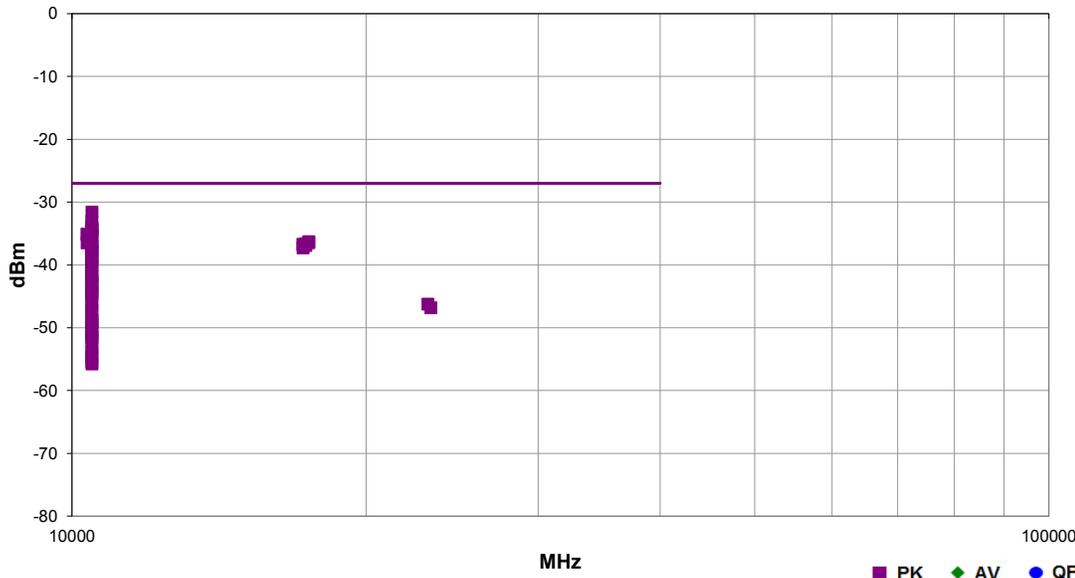
TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT were tested. The EUT was configured for the lowest, a middle, and the highest transmit frequency in each operational band. For each configuration, the spectrum was scanned throughout the specified range. Measurements were made to satisfy the three requirements of 47 CFR 15.407: Field strength under 1 GHz, Restricted Bands of 47 CFR 15.205, and EIRP of 47 CFR 15.407.

While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis, and adjusting the measurement antenna height and polarization (per ANSI C63.10:2013). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Work Order:	VDEI0009	Date:	09/23/15	<i>Jonathan Kiefer</i>
Project:	None	Temperature:	24.4 °C	
Job Site:	TX02	Humidity:	40.7% RH	
Serial Number:	70AD00074-8977	Barometric Pres.:	1021 mbar	
EUT:	Firebox T30-W (BS3AE5W)			
Configuration:	4			
Customer:	WatchGuard Technologies, Inc.			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Continuously Transmitting			
Deviations:	None			
Comments:	See comments for channel, EUT orientation, antenna chain and data rate information.			

Test Specifications	Test Method						
FCC 15.407:2015	ANSI C63.10:2013						
Run #	168	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass



Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
10481.060	1.0	97.0	Horz	PK	6.96E-07	-31.6	-27.0	-4.6	EUT Vert, Channel 48 (5240MHz), Chain B, 6 Mbps
10477.920	1.2	99.0	Horz	PK	4.94E-07	-33.1	-27.0	-6.1	EUT Vert, Ch. 48 (5240 MHz), Chain B, MCS0
10477.800	1.0	102.0	Horz	PK	4.20E-07	-33.8	-27.0	-6.8	EUT Vert, Ch. 48 (5240 MHz), Chain B, 36 Mbps
10481.000	1.0	109.0	Vert	PK	3.74E-07	-34.3	-27.0	-7.3	EUT Horz, Channel 48 (5240MHz), Chain B, 6 Mbps
10481.160	1.0	96.0	Vert	PK	3.65E-07	-34.4	-27.0	-7.4	EUT On Side, Channel 48 (5240MHz), Chain B, 6 Mbps
10480.080	1.1	99.9	Horz	PK	3.49E-07	-34.6	-27.0	-7.6	EUT Vert, Ch. 48 (5240 MHz), Chain ABC, MCS23
10360.180	1.0	93.0	Horz	PK	3.09E-07	-35.1	-27.0	-8.1	EUT Vert, Channel 36 (5180MHz), Chain B, 6 Mbps
10479.790	1.0	98.0	Horz	PK	2.90E-07	-35.4	-27.0	-8.4	EUT Vert, Ch. 48 (5240 MHz), Chain ABC, MCS23
10482.280	1.0	98.0	Horz	PK	2.90E-07	-35.4	-27.0	-8.4	EUT Vert, Ch. 48 (5240 MHz), Chain B, MCS7
10479.300	3.9	302.0	Vert	PK	2.38E-07	-36.3	-27.0	-9.3	EUT Horz, Ch. 48 (5240 MHz), Chain ABC, MCS23
17474.620	1.0	3.0	Horz	PK	2.35E-07	-36.3	-27.0	-9.3	EUT Vert, Ch. 165 (5825 MHz), Chain B, 6 Mbps
17476.350	1.0	169.0	Vert	PK	2.25E-07	-36.5	-27.0	-9.5	EUT Horz, Ch. 165 (5825 MHz), Chain B, 6 Mbps
10362.030	1.1	98.0	Vert	PK	2.24E-07	-36.5	-27.0	-9.5	EUT Horz, Channel 36 (5180MHz), Chain B, 6 Mbps
17355.700	1.0	111.0	Vert	PK	2.18E-07	-36.6	-27.0	-9.6	EUT Horz, Ch. 157 (5785 MHz), Chain B, 6 Mbps
17234.530	1.0	63.9	Horz	PK	2.13E-07	-36.7	-27.0	-9.7	EUT Vert, Ch. 149 (5745 MHz), Chain B, 6 Mbps
17353.980	1.0	279.0	Horz	PK	2.03E-07	-36.9	-27.0	-9.9	EUT Vert, Ch. 157 (5785 MHz), Chain B, 6 Mbps
10478.580	1.0	60.0	Horz	PK	1.96E-07	-37.1	-27.0	-10.1	EUT Vert, Ch. 48 (5240 MHz), Chain B, MCS8 (256-QAM)
10480.170	1.0	70.9	Horz	PK	1.96E-07	-37.1	-27.0	-10.1	EUT Vert, Ch. 48 (5240 MHz), Chain B, 54 Mbps
10477.910	1.1	93.9	Vert	PK	1.92E-07	-37.2	-27.0	-10.2	EUT On Side, Ch. 48 (5240 MHz), Chain AB, MCS15
17237.480	1.0	333.0	Vert	PK	1.86E-07	-37.3	-27.0	-10.3	EUT Horz, Ch. 149 (5745 MHz), Chain B, 6 Mbps
10481.810	3.1	282.0	Vert	PK	1.71E-07	-37.7	-27.0	-10.7	EUT Horz, Ch. 48 (5240 MHz), Chain BC, MCS15
10479.200	1.0	157.0	Vert	PK	1.63E-07	-37.9	-27.0	-10.9	EUT On Side, Ch. 48 (5240 MHz), Chain ABC, MCS23
10480.630	1.0	63.9	Horz	PK	1.33E-07	-38.8	-27.0	-11.8	EUT Vert, Ch. 48 (5240 MHz), Chain AC, MCS15
10480.130	1.9	199.0	Horz	PK	1.30E-07	-38.9	-27.0	-11.9	EUT Horz, Channel 48 (5240MHz), Chain B, 6 Mbps
10478.070	1.0	157.0	Vert	PK	1.13E-07	-39.5	-27.0	-12.5	EUT On Side, Ch. 48 (5240 MHz), Chain BC, MCS15
10478.480	4.0	178.9	Horz	PK	1.13E-07	-39.5	-27.0	-12.5	EUT On Side, Ch. 48 (5240 MHz), Chain ABC, MCS23
10478.380	3.4	290.0	Vert	PK	9.62E-08	-40.2	-27.0	-13.2	EUT Horz, Ch. 48 (5240 MHz), Chain AB, MCS15
10480.230	2.7	189.9	Horz	PK	9.40E-08	-40.3	-27.0	-13.3	EUT On Side, Channel 48 (5240MHz), Chain B, 6 Mbps
10478.390	2.0	189.0	Horz	PK	7.13E-08	-41.5	-27.0	-14.5	EUT On Side, Ch. 48 (5240 MHz), Chain AB, MCS15
10480.080	1.4	39.9	Vert	PK	6.65E-08	-41.8	-27.0	-14.8	EUT Vert, Channel 48 (5240MHz), Chain B, 6 Mbps

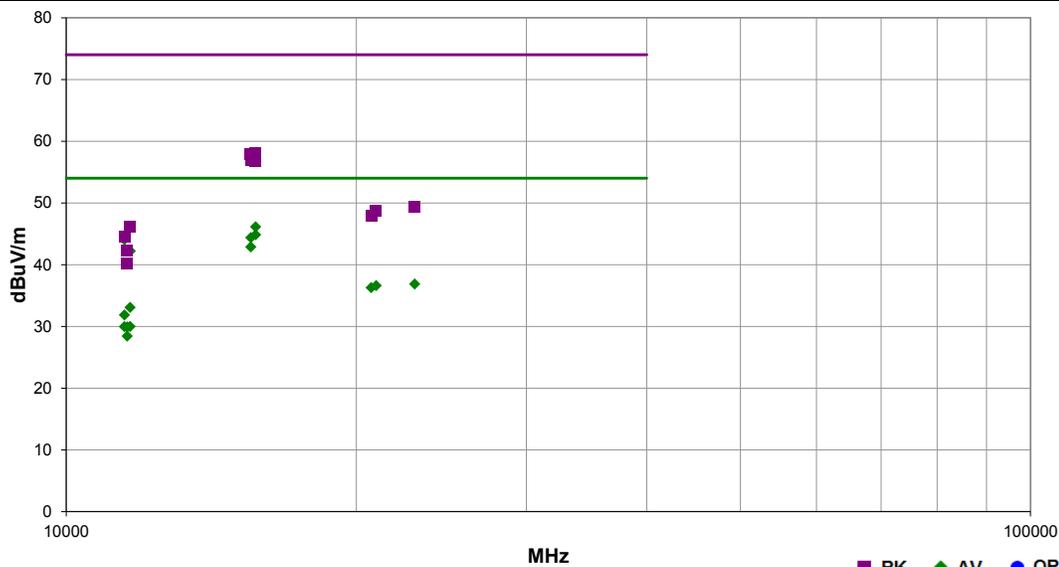
Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
10478.530	1.0	141.0	Vert	PK	6.07E-08	-42.2	-27.0	-15.2	EUT On Side, Ch. 48 (5240 MHz), Chain AC, MCS15
10480.470	1.3	57.0	Horz	PK	5.93E-08	-42.3	-27.0	-15.3	EUT Vert, Ch. 48 (5240 MHz), Chain A, MCS8 (256-QAM)
10481.880	4.0	181.0	Horz	PK	5.16E-08	-42.9	-27.0	-15.9	EUT Horz, Ch. 48 (5240 MHz), Chain BC, MCS15
10479.570	1.0	30.0	Horz	PK	4.71E-08	-43.3	-27.0	-16.3	EUT Vert, Ch. 48 (5240 MHz), Chain BC, MCS15
10478.870	2.3	303.0	Vert	PK	3.74E-08	-44.3	-27.0	-17.3	EUT Horz, Ch. 48 (5240 MHz), Chain A, MCS8 (256-QAM)
10481.780	1.0	322.9	Horz	PK	3.65E-08	-44.4	-27.0	-17.4	EUT Vert, Ch. 48 (5240 MHz), Chain A, MCS8 (256-QAM)
10479.300	1.0	128.0	Vert	PK	3.49E-08	-44.6	-27.0	-17.6	EUT On Side, Ch. 48 (5240 MHz), Chain A, MCS8 (256-QAM)
10478.310	1.3	136.9	Vert	PK	3.04E-08	-45.2	-27.0	-18.2	EUT Horz, Ch. 48 (5240 MHz), Chain AC, MCS15
23140.560	1.5	21.0	Horz	PK	2.37E-08	-46.2	-27.0	-19.2	EUT Vert, Ch. 157 (5785 MHz), Chain B, 6 Mbps
10480.570	1.1	194.0	Horz	PK	2.36E-08	-46.3	-27.0	-19.3	EUT On Side, Ch. 48 (5240 MHz), Chain BC, MCS15
23301.800	1.5	74.0	Horz	PK	2.07E-08	-46.8	-27.0	-19.8	EUT Vert, Ch. 165 (5825 MHz), Chain B, 6 Mbps
10479.320	1.0	81.0	Vert	PK	1.96E-08	-47.1	-27.0	-20.1	EUT Vert, Ch. 48 (5240 MHz), Chain AB, MCS15
10478.000	3.9	52.9	Horz	PK	1.88E-08	-47.3	-27.0	-20.3	EUT Horz, Ch. 48 (5240 MHz), Chain ABC, MCS23
10479.320	1.0	86.0	Vert	PK	1.33E-08	-48.8	-27.0	-21.8	EUT Vert, Ch. 48 (5240 MHz), Chain AB, MCS15
10481.090	3.8	159.0	Horz	PK	1.30E-08	-48.9	-27.0	-21.9	EUT Horz, Ch. 48 (5240 MHz), Chain AC, MCS15
10480.800	2.6	138.0	Horz	PK	1.18E-08	-49.3	-27.0	-22.3	EUT On Side, Ch. 48 (5240 MHz), Chain A, MCS8 (256-QAM)
10477.980	2.4	64.9	Vert	PK	1.13E-08	-49.5	-27.0	-22.5	EUT Vert, Ch. 48 (5240 MHz), Chain AC, MCS15
10479.200	2.3	25.0	Vert	PK	8.77E-09	-50.6	-27.0	-23.6	EUT Vert, Ch. 48 (5240 MHz), Chain BC, MCS15
10479.160	1.0	114.0	Horz	PK	8.38E-09	-50.8	-27.0	-23.8	EUT Horz, Ch. 48 (5240 MHz), Chain AB, MCS15
10479.340	1.0	99.9	Vert	PK	7.13E-09	-51.5	-27.0	-24.5	EUT On Side, Ch. 48 (5240 MHz), Chain C, MCS8 (256-QAM)
10482.290	1.0	360.0	Horz	PK	7.12E-09	-51.5	-27.0	-24.5	EUT Vert, Ch. 48 (5240 MHz), Chain C, MCS8 (256-QAM)
10479.250	1.0	159.9	Horz	PK	6.81E-09	-51.7	-27.0	-24.7	EUT On Side, Ch. 48 (5240 MHz), Chain AC, MCS15
10480.800	1.0	358.9	Horz	PK	4.60E-09	-53.4	-27.0	-26.4	EUT Horz, Ch. 48 (5240 MHz), Chain A, MCS8 (256-QAM)
10480.190	1.0	151.0	Horz	PK	4.20E-09	-53.8	-27.0	-26.8	EUT On Side, Ch. 48 (5240 MHz), Chain C, MCS8 (256-QAM)
10478.060	1.0	39.9	Horz	PK	3.34E-09	-54.8	-27.0	-27.8	EUT Horz, Ch. 48 (5240 MHz), Chain C, MCS8 (256-QAM)
10478.270	1.0	261.0	Vert	PK	2.91E-09	-55.4	-27.0	-28.4	EUT Vert, Ch. 48 (5240 MHz), Chain C, MCS8 (256-QAM)
10481.630	1.0	68.0	Horz	PK	2.65E-09	-55.8	-27.0	-28.8	EUT Horz, Ch. 48 (5240 MHz), Chain C, MCS8 (256-QAM)

SPURIOUS RADIATED EMISSIONS

Work Order:	VDEI0009	Date:	09/24/15	<i>Jonathan Kiefer</i>
Project:	None	Temperature:	24.3 °C	
Job Site:	TX02	Humidity:	41.4% RH	
Serial Number:	70AD00074-8977	Barometric Pres.:	1021 mbar	
EUT:	Firebox T30-W (BS3AE5W)			
Configuration:	4			
Customer:	WatchGuard Technologies, Inc.			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Continuously Transmitting			
Deviations:	None			
Comments:	PK and AVG (RMS) data. See comments for channel, EUT orientation, antenna chain and data rate information.			

Test Specifications	Test Method
FCC 15.407:2015	ANSI C63.10:2013

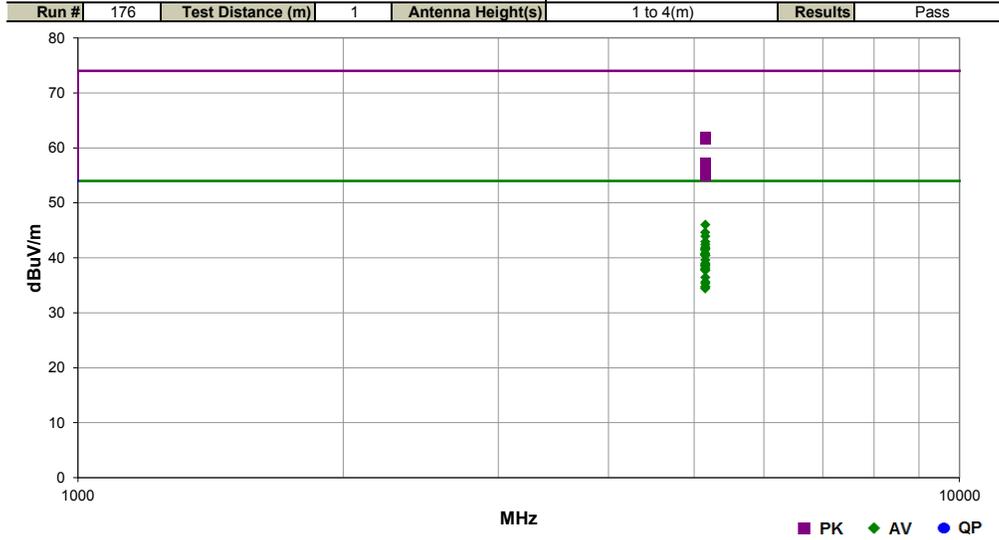
Run #	171	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
15720.780	34.0	12.1	1.0	54.0	3.0	0.0	Horz	AV	0.0	46.1	54.0	-7.9	EUT Vert, Ch. 48 (5240 MHz), Chain B, 6 Mbps
15720.630	32.7	12.1	1.0	122.0	3.0	0.0	Vert	AV	0.0	44.8	54.0	-9.2	EUT Horz, Ch. 48 (5240 MHz), Chain B, 6 Mbps
15538.500	32.5	11.9	3.3	82.9	3.0	0.0	Vert	AV	0.0	44.4	54.0	-9.6	EUT Horz, Ch. 36 (5180 MHz), Chain B, 6 Mbps
15537.500	31.0	11.9	1.0	85.0	3.0	0.0	Horz	AV	0.0	42.9	54.0	-11.1	EUT Vert, Ch. 36 (5180 MHz), Chain B, 6 Mbps
15721.240	45.9	12.1	1.0	54.0	3.0	0.0	Horz	PK	0.0	58.0	74.0	-16.0	EUT Vert, Ch. 48 (5240 MHz), Chain B, 6 Mbps
15539.000	46.1	11.9	1.0	85.0	3.0	0.0	Horz	PK	0.0	58.0	74.0	-16.0	EUT Vert, Ch. 36 (5180 MHz), Chain B, 6 Mbps
15541.420	45.1	11.9	3.3	82.9	3.0	0.0	Vert	PK	0.0	57.0	74.0	-17.0	EUT Horz, Ch. 36 (5180 MHz), Chain B, 6 Mbps
22982.360	48.7	-11.8	1.5	268.9	3.0	0.0	Horz	AV	0.0	36.9	54.0	-17.1	EUT Vert, Ch. 149 (5745 MHz), Chain B, 6 Mbps
15720.680	44.6	12.1	1.0	122.0	3.0	0.0	Vert	PK	0.0	56.7	74.0	-17.3	EUT Horz, Ch. 48 (5240 MHz), Chain B, 6 Mbps
20958.020	49.4	-12.8	1.5	358.9	3.0	0.0	Horz	AV	0.0	36.6	54.0	-17.4	EUT Vert, Ch. 48 (5240 MHz), Chain B, 6 Mbps
20717.700	49.0	-12.7	1.5	195.0	3.0	0.0	Horz	AV	0.0	36.3	54.0	-17.7	EUT Vert, Ch. 36 (5180 MHz), Chain B, 6 Mbps
11649.690	35.1	-2.0	1.0	16.9	3.0	0.0	Horz	AV	0.0	33.1	54.0	-20.9	EUT Vert, Ch. 165 (5825 MHz), Chain B, 6 Mbps
11489.850	34.3	-2.5	2.1	351.0	3.0	0.0	Vert	AV	0.0	31.8	54.0	-22.2	EUT Horz, Ch. 149 (5745 MHz), Chain B, 6 Mbps
11649.880	32.0	-2.0	1.0	357.0	3.0	0.0	Vert	AV	0.0	30.0	54.0	-24.0	EUT Horz, Ch. 165 (5825 MHz), Chain B, 6 Mbps
11490.770	32.4	-2.5	1.0	103.0	3.0	0.0	Horz	AV	0.0	29.9	54.0	-24.1	EUT Vert, Ch. 149 (5745 MHz), Chain B, 6 Mbps
11569.150	32.3	-2.4	1.0	39.9	3.0	0.0	Horz	AV	0.0	29.9	54.0	-24.1	EUT Vert, Ch. 157 (5785 MHz), Chain B, 6 Mbps
22981.800	61.2	-11.8	1.5	268.9	3.0	0.0	Horz	PK	0.0	49.4	74.0	-24.6	EUT Vert, Ch. 149 (5745 MHz), Chain B, 6 Mbps
20961.390	61.6	-12.8	1.5	358.9	3.0	0.0	Horz	PK	0.0	48.8	74.0	-25.2	EUT Vert, Ch. 48 (5240 MHz), Chain B, 6 Mbps
11569.770	30.8	-2.4	1.0	64.9	3.0	0.0	Vert	AV	0.0	28.4	54.0	-25.6	EUT Horz, Ch. 157 (5785 MHz), Chain B, 6 Mbps
20718.290	60.7	-12.7	1.5	195.0	3.0	0.0	Horz	PK	0.0	48.0	74.0	-26.0	EUT Vert, Ch. 36 (5180 MHz), Chain B, 6 Mbps
11650.380	48.1	-2.0	1.0	16.9	3.0	0.0	Horz	PK	0.0	46.1	74.0	-27.9	EUT Vert, Ch. 165 (5825 MHz), Chain B, 6 Mbps
11492.050	47.0	-2.5	2.1	351.0	3.0	0.0	Vert	PK	0.0	44.5	74.0	-29.5	EUT Horz, Ch. 149 (5745 MHz), Chain B, 6 Mbps
11490.430	46.5	-2.5	1.0	103.0	3.0	0.0	Horz	PK	0.0	44.0	74.0	-30.0	EUT Vert, Ch. 149 (5745 MHz), Chain B, 6 Mbps
11568.620	44.6	-2.4	1.0	39.9	3.0	0.0	Horz	PK	0.0	42.2	74.0	-31.8	EUT Vert, Ch. 157 (5785 MHz), Chain B, 6 Mbps
11651.000	44.2	-2.0	1.0	357.0	3.0	0.0	Vert	PK	0.0	42.2	74.0	-31.8	EUT Horz, Ch. 165 (5825 MHz), Chain B, 6 Mbps
11569.920	42.5	-2.4	1.0	64.9	3.0	0.0	Vert	PK	0.0	40.1	74.0	-33.9	EUT Horz, Ch. 157 (5785 MHz), Chain B, 6 Mbps

Work Order:	VDEI0009	Date:	09/24/15	<i>Jonathan Kiefer</i>
Project:	None	Temperature:	24.3 °C	
Job Site:	TX02	Humidity:	41.4% RH	
Serial Number:	70AD00074-8977	Barometric Pres.:	1021 mbar	
EUT: Firebox T30-W (BS3AE5W)				Tested by: Jonathan Kiefer
Configuration:	4			
Customer:	WatchGuard Technologies, Inc.			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Continuously Transmitting			
Deviations:	None			
Comments:	5150 MHz Band Edge. PK and AVG (RMS). See comments for channel, EUT orientation, antenna chain and data rate information.			

Test Specifications	Test Method
FCC 15.407:2015	ANSI C63.10:2013



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
5149.993	47.6	8.0	2.2	138.0	1.0	0.0	Horz	AV	-9.5	46.0	54.0	-8.0	EUT On Side, Ch. 36-48 (5210 MHz), Chain AC, MCS9 (256-QAM)
5147.740	46.2	8.0	2.3	148.9	1.0	0.0	Horz	AV	-9.5	44.6	54.0	-9.4	EUT On Side, Ch. 36-48 (5210 MHz), Chain AB, MCS9 (256-QAM)
5149.533	45.5	8.0	2.2	111.0	1.0	0.0	Horz	AV	-9.5	43.9	54.0	-10.1	EUT On Side, Ch. 36-48 (5210 MHz), Chain B, MCS0
5149.960	44.5	8.0	2.0	147.0	1.0	0.0	Horz	AV	-9.5	42.9	54.0	-11.1	EUT On Side, Ch. 36-48 (5210 MHz), Chain B, MCS0
5149.940	44.0	8.0	2.2	117.0	1.0	0.0	Horz	AV	-9.5	42.4	54.0	-11.6	EUT On Side, Ch. 36/40 (5190 MHz), Chain B, MCS0
5149.933	43.5	8.0	4.0	93.0	1.0	0.0	Vert	AV	-9.5	41.9	54.0	-12.1	EUT On Side, Ch. 36-48 (5210 MHz), Chain ABC, MCS9 (256-QAM)
5146.113	63.5	8.0	2.3	148.9	1.0	0.0	Horz	PK	-9.5	61.9	74.0	-12.1	EUT On Side, Ch. 36-48 (5210 MHz), Chain AB, MCS9 (256-QAM)
5148.993	43.3	8.0	2.0	346.9	1.0	0.0	Vert	AV	-9.5	41.7	54.0	-12.3	EUT Vert, Ch. 36-48 (5210 MHz), Chain B, MCS0
5150.000	43.2	8.0	2.0	171.0	1.0	0.0	Horz	AV	-9.5	41.6	54.0	-12.4	EUT On Side, Ch. 36/40 (5190 MHz), Chain B, MCS0
5149.340	63.1	8.0	2.2	138.0	1.0	0.0	Horz	PK	-9.5	61.5	74.0	-12.5	EUT On Side, Ch. 36-48 (5210 MHz), Chain AC, MCS9 (256-QAM)
5146.140	43.0	8.0	2.3	140.0	1.0	0.0	Horz	AV	-9.5	41.4	54.0	-12.6	EUT On Side, Ch. 36-48 (5210 MHz), Chain BC, MCS9 (256-QAM)
5148.067	42.4	8.0	2.6	134.0	1.0	0.0	Horz	AV	-9.5	40.8	54.0	-13.2	EUT On Side, Ch. 36/40 (5190 MHz), Chain AC, MCS15
5146.093	42.2	8.0	1.2	88.9	1.0	0.0	Horz	AV	-9.5	40.6	54.0	-13.4	EUT Vert, Ch. 36-48 (5210 MHz), Chain B, MCS0
5149.973	42.0	8.0	2.3	170.0	1.0	0.0	Horz	AV	-9.5	40.4	54.0	-13.6	EUT On Side, Ch. 36/40 (5190 MHz), Chain AB, MCS15
5149.087	42.0	8.0	1.7	162.0	1.0	0.0	Horz	AV	-9.5	40.4	54.0	-13.6	EUT Horz, Ch. 36-48 (5210 MHz), Chain B, MCS0
5149.907	41.2	8.0	2.0	175.0	1.0	0.0	Horz	AV	-9.5	39.6	54.0	-14.4	EUT On Side, Ch. 36/40 (5190 MHz), Chain ABC, MCS23
5149.913	40.6	8.0	2.0	144.0	1.0	0.0	Horz	AV	-9.5	39.0	54.0	-15.0	EUT Horz, Ch. 36/40 (5190 MHz), Chain B, MCS0
5149.613	40.4	8.0	2.0	3.0	1.0	0.0	Vert	AV	-9.5	38.8	54.0	-15.2	EUT Vert, Ch. 36/40 (5190 MHz), Chain B, MCS0
5146.247	40.2	8.0	4.0	158.0	1.0	0.0	Vert	AV	-9.5	38.6	54.0	-15.4	EUT On Side, Ch. 36-48 (5210 MHz), Chain B, MCS0
5149.300	40.1	8.0	2.2	141.0	1.0	0.0	Horz	AV	-9.5	38.5	54.0	-15.5	EUT On Side, Ch. 36/40 (5190 MHz), Chain BC, MCS15
5149.913	39.7	8.0	2.0	121.0	1.0	0.0	Vert	AV	-9.5	38.1	54.0	-15.9	EUT Horz, Ch. 36/40 (5190 MHz), Chain B, MCS0
5146.213	39.5	8.0	2.2	181.0	1.0	0.0	Horz	AV	-9.5	37.9	54.0	-16.1	EUT On Side, Ch. 36-48 (5210 MHz), Chain B, MCS9 (256-QAM)
5149.827	39.3	8.0	1.7	144.0	1.0	0.0	Horz	AV	-9.5	37.7	54.0	-16.3	EUT On Side, Ch. 36/40 (5190 MHz), Chain B, MCS7
5148.600	58.9	8.0	2.2	181.0	1.0	0.0	Horz	PK	-9.5	57.3	74.0	-16.7	EUT On Side, Ch. 36-48 (5210 MHz), Chain B, MCS9 (256-QAM)
5146.000	58.7	8.0	2.2	111.0	1.0	0.0	Horz	PK	-9.5	57.1	74.0	-16.9	EUT On Side, Ch. 36-48 (5210 MHz), Chain B, MCS0
5149.773	58.4	8.0	2.2	117.0	1.0	0.0	Horz	PK	-9.5	56.8	74.0	-17.2	EUT On Side, Ch. 36/40 (5190 MHz), Chain B, MCS0
5149.687	38.0	8.0	2.3	115.0	1.0	0.0	Horz	AV	-9.5	36.4	54.0	-17.6	EUT On Side, Ch. 36 (5180 MHz), Chain B, MCS0
5149.880	57.5	8.0	2.0	171.0	1.0	0.0	Horz	PK	-9.5	55.9	74.0	-18.1	EUT On Side, Ch. 36/40 (5190 MHz), Chain B, MCS0
5149.993	37.2	8.0	1.0	112.9	1.0	0.0	Horz	AV	-9.5	35.6	54.0	-18.4	EUT Vert, Ch. 36/40 (5190 MHz), Chain B, MCS0
5149.213	57.1	8.0	2.0	147.0	1.0	0.0	Horz	PK	-9.5	55.5	74.0	-18.5	EUT On Side, Ch. 36-48 (5210 MHz), Chain B, MCS0
5149.393	36.9	8.0	1.9	116.0	1.0	0.0	Horz	AV	-9.5	35.3	54.0	-18.7	EUT On Side, Ch. 36 (5180 MHz), Chain B, 6 Mbps
5147.480	56.7	8.0	2.0	346.9	1.0	0.0	Vert	PK	-9.5	55.1	74.0	-18.9	EUT Vert, Ch. 36-48 (5210 MHz), Chain B, MCS0
5148.573	56.4	8.0	2.3	114.0	1.0	0.0	Horz	PK	-9.5	54.8	74.0	-19.2	EUT On Side, Ch. 36 (5180 MHz), Chain B, 54 Mbps
5149.980	36.3	8.0	2.3	114.0	1.0	0.0	Horz	AV	-9.5	34.7	54.0	-19.3	EUT On Side, Ch. 36 (5180 MHz), Chain B, 54 Mbps
5149.687	36.3	8.0	2.5	157.0	1.0	0.0	Horz	AV	-9.5	34.7	54.0	-19.3	EUT On Side, Ch. 36 (5180 MHz), Chain B, 36 Mbps
5146.320	36.0	8.0	1.0	74.0	1.0	0.0	Vert	AV	-9.5	34.4	54.0	-19.6	EUT Horz, Ch. 36-48 (5210 MHz), Chain B, MCS0
5149.380	35.5	8.0	1.7	144.0	1.0	0.0	Horz	AV	-9.5	33.9	54.0	-20.1	EUT On Side, Ch. 36/40 (5190 MHz), Chain B, MCS9 (256-QAM)
5149.967	55.3	8.0	2.0	3.0	1.0	0.0	Vert	PK	-9.5	53.7	74.0	-20.3	EUT Vert, Ch. 36/40 (5190 MHz), Chain B, MCS0
5149.333	35.3	8.0	2.0	152.0	1.0	0.0	Horz	AV	-9.5	33.7	54.0	-20.3	EUT Horz, Ch. 36 (5180 MHz), Chain B, 6 Mbps
5146.107	55.3	8.0	1.7	162.0	1.0	0.0	Horz	PK	-9.5	53.7	74.0	-20.3	EUT Horz, Ch. 36-48 (5210 MHz), Chain B, MCS0
5148.387	55.1	8.0	1.2	88.9	1.0	0.0	Horz	PK	-9.5	53.5	74.0	-20.5	EUT Vert, Ch. 36-48 (5210 MHz), Chain B, MCS0
5149.880	54.9	8.0	2.0	144.0	1.0	0.0	Horz	PK	-9.5	53.3	74.0	-20.7	EUT Horz, Ch. 36/40 (5190 MHz), Chain B, MCS0
5149.367	54.7	8.0	1.7	144.0	1.0	0.0	Horz	PK	-9.5	53.1	74.0	-20.9	EUT On Side, Ch. 36 (5180 MHz), Chain B, MCS7
5149.473	34.3	8.0	1.0	100.9	1.0	0.0	Horz	AV	-9.5	32.7	54.0	-21.3	EUT Vert, Ch. 36 (5180 MHz), Chain B, 6 Mbps

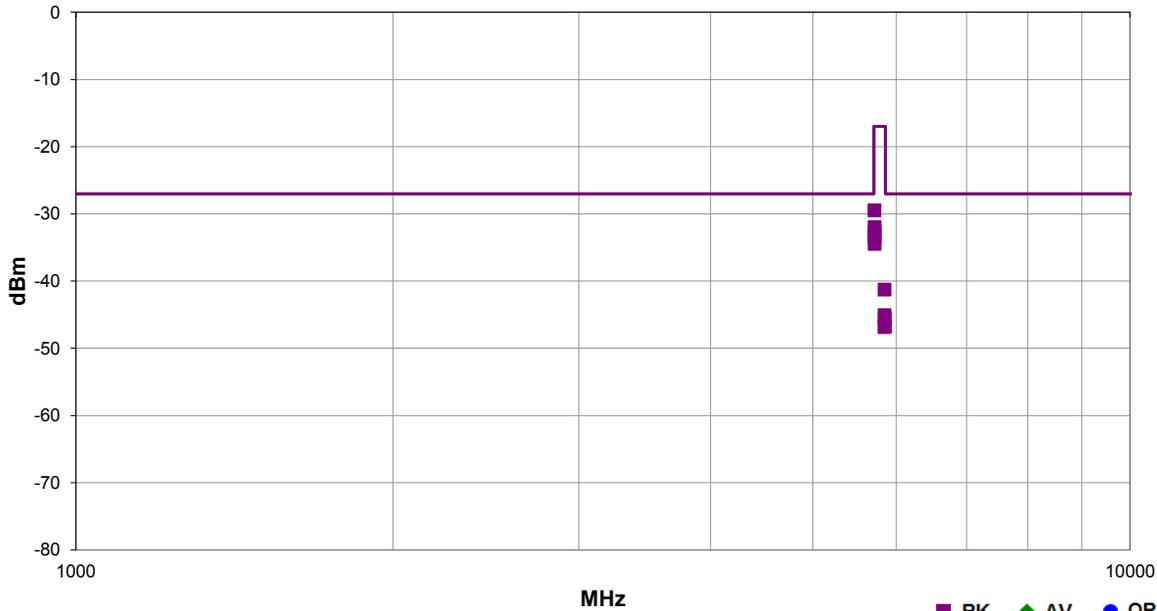
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
5149.700	54.2	8.0	2.0	121.0	1.0	0.0	Vert	PK	-9.5	52.6	74.0	-21.4	EUT Horz, Ch. 36/40 (5190 MHz), Chain B, MCS0
5149.260	34.2	8.0	2.2	151.0	1.0	0.0	Horz	AV	-9.5	32.6	54.0	-21.4	EUT On Side, Ch. 36 (5180 MHz), Chain B, MCS7
5149.287	33.7	8.0	1.0	360.0	1.0	0.0	Vert	AV	-9.5	32.1	54.0	-21.9	EUT Vert, Ch. 36 (5180 MHz), Chain B, 6 Mbps
5149.133	53.4	8.0	4.0	158.0	1.0	0.0	Vert	PK	-9.5	51.8	74.0	-22.2	EUT On Side, Ch. 36-48 (5210 MHz), Chain B, MCS0
5149.820	53.0	8.0	2.3	115.0	1.0	0.0	Horz	PK	-9.5	51.4	74.0	-22.6	EUT On Side, Ch. 36 (5180 MHz), Chain B, MCS0
5149.887	32.6	8.0	1.0	320.0	1.0	0.0	Vert	AV	-9.5	31.0	54.0	-23.0	EUT On Side, Ch. 36/40 (5190 MHz), Chain B, MCS0
5147.747	32.5	8.0	2.1	278.0	1.0	0.0	Vert	AV	-9.5	30.9	54.0	-23.1	EUT On Side, Ch. 36 (5180 MHz), Chain B, 6 Mbps
5149.940	32.1	8.0	2.5	141.9	1.0	0.0	Horz	AV	-9.5	30.5	54.0	-23.5	EUT On Side, Ch. 36 (5180 MHz), Chain B, MCS8 (256-QAM)
5149.433	51.3	8.0	2.5	157.0	1.0	0.0	Horz	PK	-9.5	49.7	74.0	-24.3	EUT On Side, Ch. 36 (5180 MHz), Chain B, 36 Mbps
5148.393	31.0	8.0	1.3	105.9	1.0	0.0	Vert	AV	-9.5	29.4	54.0	-24.6	EUT Horz, Ch. 36 (5180 MHz), Chain B, 6 Mbps
5149.327	50.9	8.0	2.2	151.0	1.0	0.0	Horz	PK	-9.5	49.3	74.0	-24.7	EUT On Side, Ch. 36 (5180 MHz), Chain B, MCS7
5149.240	50.7	8.0	1.7	144.0	1.0	0.0	Horz	PK	-9.5	49.1	74.0	-24.9	EUT On Side, Ch. 36/40 (5190 MHz), Chain B, MCS9 (256-QAM)
5149.647	50.7	8.0	1.0	112.9	1.0	0.0	Horz	PK	-9.5	49.1	74.0	-24.9	EUT Vert, Ch. 36/40 (5190 MHz), Chain B, MCS0
5148.453	50.3	8.0	1.9	116.0	1.0	0.0	Horz	PK	-9.5	48.7	74.0	-25.3	EUT On Side, Ch. 36 (5180 MHz), Chain B, 6 Mbps
5149.920	48.5	8.0	2.0	152.0	1.0	0.0	Horz	PK	-9.5	46.9	74.0	-27.1	EUT Horz, Ch. 36 (5180 MHz), Chain B, 6 Mbps
5146.073	48.5	8.0	1.0	74.0	1.0	0.0	Vert	PK	-9.5	46.9	74.0	-27.1	EUT Horz, Ch. 36-48 (5210 MHz), Chain B, MCS0
5149.820	47.0	8.0	1.0	100.9	1.0	0.0	Horz	PK	-9.5	45.4	74.0	-28.6	EUT Vert, Ch. 36 (5180 MHz), Chain B, 6 Mbps
5149.447	46.8	8.0	1.0	360.0	1.0	0.0	Vert	PK	-9.5	45.2	74.0	-28.8	EUT Vert, Ch. 36 (5180 MHz), Chain B, 6 Mbps
5149.640	46.1	8.0	1.0	320.0	1.0	0.0	Vert	PK	-9.5	44.5	74.0	-29.5	EUT On Side, Ch. 36/40 (5190 MHz), Chain B, MCS0
5147.200	45.3	8.0	2.1	278.0	1.0	0.0	Vert	PK	-9.5	43.7	74.0	-30.3	EUT On Side, Ch. 36 (5180 MHz), Chain B, 6 Mbps
5148.020	45.0	8.0	2.5	141.9	1.0	0.0	Horz	PK	-9.5	43.4	74.0	-30.6	EUT On Side, Ch. 36 (5180 MHz), Chain B, MCS8 (256-QAM)
5149.573	43.2	8.0	1.3	105.9	1.0	0.0	Vert	PK	-9.5	41.6	74.0	-32.4	EUT Horz, Ch. 36 (5180 MHz), Chain B, 6 Mbps

SPURIOUS RADIATED EMISSIONS

Work Order:	VDEI0009	Date:	09/26/15	<i>Jonathan Kiefer</i>
Project:	None	Temperature:	24.3 °C	
Job Site:	TX02	Humidity:	41.4% RH	
Serial Number:	70AD00074-8977	Barometric Pres.:	1021 mbar	
EUT:	Firebox T30-W (BS3AE5W)			
Configuration:	4			
Customer:	WatchGuard Technologies, Inc.			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Continuously Transmitting			
Deviations:	None			
Comments:	5725 and 5850 Band Edge. See comments for channel, EUT orientation, antenna chain and data rate information.			

Test Specifications	Test Method
FCC 15.407:2015	ANSI C63.10:2013

Run #	186	Test Distance (m)	1	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
5722.407	1.3	33.9	Vert	PK	1.13E-06	-29.5	-17.0	-12.5	EUT Vert, Ch. 149-161 (5775 MHz), Chain ABC, MCS0
5724.967	2.9	32.0	Vert	PK	6.35E-07	-32.0	-17.0	-15.0	EUT Vert, Ch. 149/153 (5755 MHz), Chain ABC, MCS16
5724.313	1.0	43.0	Vert	PK	5.40E-07	-32.7	-17.0	-15.7	EUT Vert, Ch. 149/153 (5755 MHz), Chain ABC, MCS9 (256-QAM)
5724.567	1.3	43.0	Vert	PK	4.39E-07	-33.6	-17.0	-16.6	EUT Vert, Ch. 149 (5745 MHz), Chain AC, MCS8 (256-QAM)
5724.880	1.2	52.9	Vert	PK	3.57E-07	-34.5	-17.0	-17.5	EUT Vert, Ch. 149 (5745 MHz), Chain AC, MCS8
5850.520	1.2	73.0	Vert	PK	7.48E-08	-41.3	-17.0	-24.3	EUT Vert, Ch. 165 (5825 MHz), Chain AC, MCS8 (256-QAM)
5850.540	1.3	55.0	Vert	PK	3.12E-08	-45.1	-17.0	-28.1	EUT Vert, Ch. 149-161 (5775 MHz), Chain ABC, MCS0
5851.867	1.3	357.9	Vert	PK	2.78E-08	-45.6	-17.0	-28.6	EUT Vert, Ch. 165 (5825 MHz), Chain AC, MCS8
5850.507	1.3	14.0	Vert	PK	2.11E-08	-46.8	-17.0	-29.8	EUT Vert, Ch. 157/161 (5795 MHz), Chain ABC, MCS9 (256-QAM)
5852.653	1.3	24.0	Vert	PK	2.06E-08	-46.9	-17.0	-29.9	EUT Vert, Ch. 157/161 (5795 MHz), Chain ABC, MCS16

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. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Continuously Transmitting

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

VDEI0009 - 3

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	26500 MHz
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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
Antenna - Biconilog	ETS Lindgren	3143B	AYF	4/7/2014	24 mo
Amplifier - Pre-Amplifier	Miteq	AM-1551	PAH	9/18/2015	12 mo
Cable	Northwest EMC	RE 9kHz - 1GHz	TXB	9/18/2015	12 mo
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	1/28/2015	12 mo
Filter - Low Pass	Micro-Tronics	LPM50004	HHV	8/11/2015	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AJL	9/15/2014	24 mo
Cable	Northwest EMC	1-8.2 GHz	TXC	9/18/2015	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAJ	9/18/2015	12 mo
Attenuator	Fairview Microwave	SA18H-20	TKQ	NCR	0 mo
Filter - High Pass	Micro-Tronics	HPM50111	HHX	8/11/2015	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AJF	NCR	0 mo
Cable	Northwest EMC	8-18GHz	TXD	10/27/2014	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	PAK	10/27/2014	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AJG	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	PAL	10/27/2014	12 mo
Antenna - Double Ridge	A.H. Systems, Inc.	SAS-574	AXW	4/23/2014	24 mo
Cable	Northwest EMC	18-40GHz	TXE	11/21/2014	12 mo
Amplifier - Pre-Amplifier	Miteq	JSDQK42-18004000-60-5P	PAM	11/21/2014	12 mo
Filter - Band Pass/Notch	Micro-Tronics	BRC50705	HHS	8/11/2015	12 mo
Filter - Band Pass/Notch	Micro-Tronics	BRC50703	HHQ	8/10/2015	12 mo

TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT were tested. The EUT was configured for the lowest, a middle, and the highest transmit frequency in each operational band. For each configuration, the spectrum was scanned throughout the specified range. Measurements were made to satisfy the three requirements of 47 CFR 15.407: Field strength under 1GHz, Restricted Bands of 47 CFR 15.205, and EIRP of 47 CFR 15.407.

While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis, and adjusting the measurement antenna height and polarization (per ANSI C63.10:2013). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

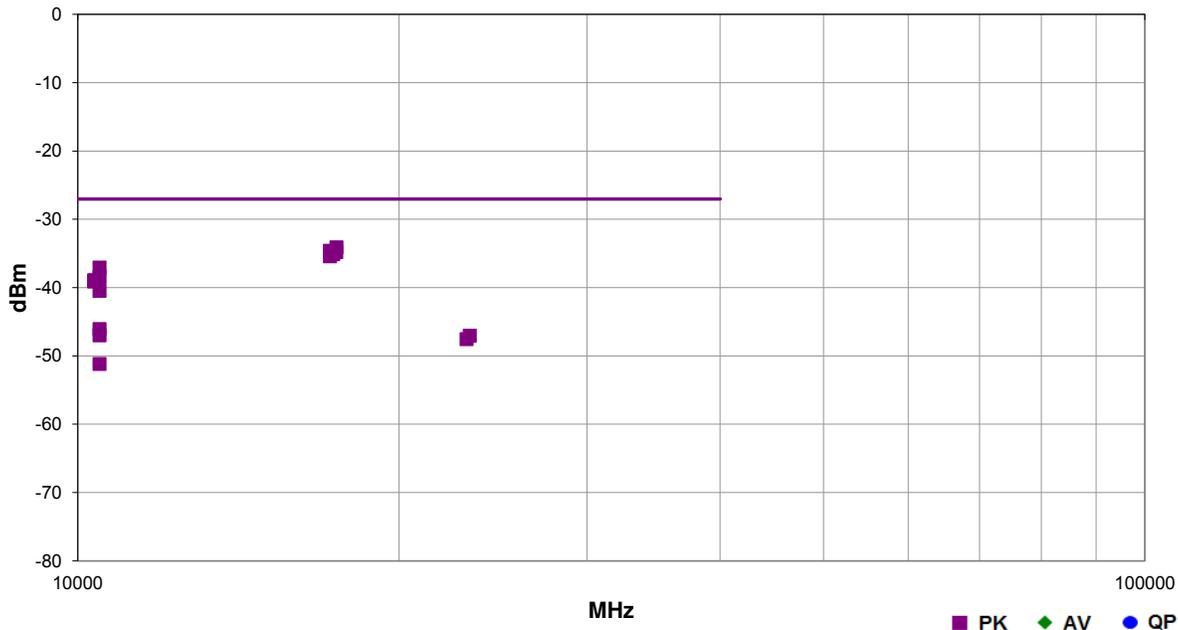


SPURIOUS RADIATED EMISSIONS

Work Order:	VDEI0009	Date:	09/27/15	<i>Jonathan Kiefer</i>
Project:	None	Temperature:	26.2 °C	
Job Site:	TX02	Humidity:	39.7% RH	
Serial Number:	70AF02717-B385	Barometric Pres.:	1018 mbar	
EUT:	Firebox T50-W (BS5AE7W)			
Configuration:	3			
Customer:	WatchGuard Technologies, Inc.			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Continuously Transmitting			
Deviations:	None			
Comments:	See comments for channel, EUT orientation, antenna chain, and data rate information.			

Test Specifications	Test Method
FCC 15.407:2015	ANSI C63.10:2013

Run #	209	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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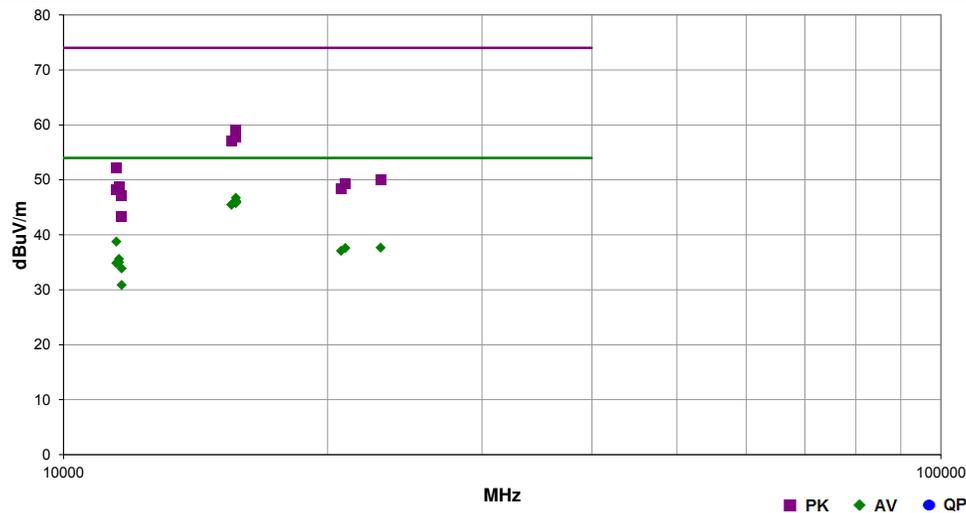


Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
10480.330	3.3	80.0	Horz	PK	1.96E-07	-37.1	-27.0	-10.1	EUT Vert, Ch. 48 (5240 MHz), Chain B, 6 Mbps
10480.280	2.4	165.9	Vert	PK	1.42E-07	-38.5	-27.0	-11.5	EUT On Side, Ch. 48 (5240 MHz), Chain B, 6 Mbps
10360.340	1.2	151.0	Vert	PK	1.29E-07	-38.9	-27.0	-11.9	EUT On Side, Ch. 36 (5180 MHz), Chain B, 6 Mbps
10361.060	1.3	57.0	Horz	PK	1.23E-07	-39.1	-27.0	-12.1	EUT Vert, Ch. 36 (5180 MHz), Chain B, 6 Mbps
17474.470	1.2	188.0	Horz	PK	3.90E-07	-34.1	-27.0	-7.1	EUT Vert, Ch. 165 (5825 MHz), Chain B, 6 Mbps
17237.120	1.3	188.0	Horz	PK	3.46E-07	-34.6	-27.0	-7.6	EUT Vert, Ch. 149 (5745 MHz), Chain B, 6 Mbps
10481.040	2.2	102.0	Vert	PK	8.97E-08	-40.5	-27.0	-13.5	EUT Horz, Ch. 48 (5240 MHz), Chain B, 6 Mbps
17352.970	1.2	321.0	Vert	PK	3.38E-07	-34.7	-27.0	-7.7	EUT On Side, Ch. 157 (5785 MHz), Chain B, 6 Mbps
17472.650	2.0	282.0	Vert	PK	3.31E-07	-34.8	-27.0	-7.8	EUT On Side, Ch. 165 (5825 MHz), Chain B, 6 Mbps
17354.390	1.2	57.0	Horz	PK	3.08E-07	-35.1	-27.0	-8.1	EUT Vert, Ch. 157 (5785 MHz), Chain B, 6 Mbps
17236.070	1.2	318.0	Vert	PK	2.88E-07	-35.4	-27.0	-8.4	EUT On Side, Ch. 149 (5745 MHz), Chain B, 6 Mbps
10480.970	1.3	205.0	Horz	PK	2.47E-08	-46.1	-27.0	-19.1	EUT On Side, Ch. 48 (5240 MHz), Chain B, 6 Mbps
10481.090	2.2	350.0	Horz	PK	2.01E-08	-47.0	-27.0	-20.0	EUT Horz, Ch. 48 (5240 MHz), Chain B, 6 Mbps
23300.960	1.5	108.0	Vert	PK	1.98E-08	-47.0	-27.0	-20.0	EUT On Side, Ch. 165 (5825 MHz), Chain B, 6 Mbps
23142.450	1.5	153.0	Vert	PK	1.76E-08	-47.5	-27.0	-20.5	EUT On Side, Ch. 157 (5785 MHz), Chain B, 6 Mbps
10480.340	1.3	346.9	Vert	PK	7.64E-09	-51.2	-27.0	-24.2	EUT Vert, Ch. 48 (5240 MHz), Chain B, 6 Mbps

Work Order:	VDEI0009	Date:	09/27/15	<i>Jonathan Kiefer</i>
Project:	None	Temperature:	26.2 °C	
Job Site:	TX02	Humidity:	39.7% RH	
Serial Number:	70AF02717-B385	Barometric Pres.:	1018 mbar	
Tested by: Jonathan Kiefer				
EUT:	Firebox T50-W (BS5AE7W)			
Configuration:	3			
Customer:	WatchGuard Technologies, Inc.			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Continuously Transmitting			
Deviations:	None			
Comments:	See comments for channel, EUT orientation, antenna chain, and data rate information.			

Test Specifications	Test Method
FCC 15.407:2015	ANSI C63.10:2013

Run #	210	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
15721.790	34.6	12.1	3.0	171.0	3.0	0.0	Vert	AV	0.0	46.7	54.0	-7.3	EUT On Side, Ch. 48 (5240 MHz), Chain B, MCS0
15719.610	34.0	12.1	1.3	360.0	3.0	0.0	Vert	AV	0.0	46.1	54.0	-7.9	EUT On Side, Ch. 48 (5240 MHz), Chain B, 54 Mbps
15718.780	34.0	12.1	1.3	146.0	3.0	0.0	Vert	AV	0.0	46.1	54.0	-7.9	EUT On Side, Ch. 48 (5240 MHz), Chain B, 6 Mbps
15722.310	33.9	12.1	1.3	278.0	3.0	0.0	Vert	AV	0.0	46.0	54.0	-8.0	EUT On Side, Ch. 48 (5240 MHz), Chain B, 36 Mbps
15721.770	33.9	12.1	1.3	199.0	3.0	0.0	Horz	AV	0.0	46.0	54.0	-8.0	EUT Vert. Ch. 48 (5240 MHz), Chain B, 6 Mbps
15721.260	33.8	12.1	1.3	45.0	3.0	0.0	Vert	AV	0.0	45.9	54.0	-8.1	EUT On Side, Ch. 48 (5240 MHz), Chain AB, MCS15
15720.160	33.8	12.1	1.3	342.0	3.0	0.0	Vert	AV	0.0	45.9	54.0	-8.1	EUT On Side, Ch. 48 (5240 MHz), Chain A, MCS8 (256-QAM)
15720.050	33.8	12.1	1.3	98.0	3.0	0.0	Vert	AV	0.0	45.9	54.0	-8.1	EUT On Side, Ch. 48 (5240 MHz), Chain BC, MCS15
15722.490	33.7	12.1	3.5	140.0	3.0	0.0	Vert	AV	0.0	45.8	54.0	-8.2	EUT On Side, Ch. 48 (5240 MHz), Chain ABC, MCS23
15721.990	33.7	12.1	1.3	237.0	3.0	0.0	Vert	AV	0.0	45.8	54.0	-8.2	EUT On Side, Ch. 48 (5240 MHz), Chain B, MCS7
15720.810	33.7	12.1	1.8	243.0	3.0	0.0	Vert	AV	0.0	45.8	54.0	-8.2	EUT On Side, Ch. 48 (5240 MHz), Chain C, MCS8 (256-QAM)
15719.580	33.7	12.1	1.3	219.9	3.0	0.0	Vert	AV	0.0	45.8	54.0	-8.2	EUT On Side, Ch. 48 (5240 MHz), Chain AC, MCS15
15719.030	33.7	12.1	3.8	360.0	3.0	0.0	Vert	AV	0.0	45.8	54.0	-8.2	EUT On Side, Ch. 48 (5240 MHz), Chain B, MCS8 (256-QAM)
15539.880	33.6	11.9	1.3	254.0	3.0	0.0	Horz	AV	0.0	45.5	54.0	-8.5	EUT Vert. Ch. 36 (5180 MHz), Chain B, 6 Mbps
15539.290	33.6	11.9	1.3	214.9	3.0	0.0	Vert	AV	0.0	45.5	54.0	-8.5	EUT On Side, Ch. 36 (5180 MHz), Chain B, 6 Mbps
15722.340	47.0	12.1	3.0	171.0	3.0	0.0	Vert	PK	0.0	59.1	74.0	-14.9	EUT On Side, Ch. 48 (5240 MHz), Chain B, MCS0
11489.230	41.2	-2.5	2.3	174.0	3.0	0.0	Vert	AV	0.0	38.7	54.0	-15.3	EUT On Side, Ch. 149 (5745 MHz), Chain B, 6 Mbps
15718.650	46.1	12.1	1.3	146.0	3.0	0.0	Vert	PK	0.0	58.2	74.0	-15.8	EUT On Side, Ch. 48 (5240 MHz), Chain B, 6 Mbps
15721.430	46.0	12.1	1.3	237.0	3.0	0.0	Vert	PK	0.0	58.1	74.0	-15.9	EUT On Side, Ch. 48 (5240 MHz), Chain B, MCS7
15719.690	46.0	12.1	1.3	98.0	3.0	0.0	Vert	PK	0.0	58.1	74.0	-15.9	EUT On Side, Ch. 48 (5240 MHz), Chain BC, MCS15
15720.080	45.9	12.1	1.8	243.0	3.0	0.0	Vert	PK	0.0	58.0	74.0	-16.0	EUT On Side, Ch. 48 (5240 MHz), Chain C, MCS8 (256-QAM)
15720.560	45.7	12.1	1.3	360.0	3.0	0.0	Vert	PK	0.0	57.8	74.0	-16.2	EUT On Side, Ch. 48 (5240 MHz), Chain B, 54 Mbps
15720.930	45.6	12.1	1.3	342.0	3.0	0.0	Vert	PK	0.0	57.7	74.0	-16.3	EUT On Side, Ch. 48 (5240 MHz), Chain A, MCS8 (256-QAM)
15717.670	45.6	12.1	1.3	219.9	3.0	0.0	Vert	PK	0.0	57.7	74.0	-16.3	EUT On Side, Ch. 48 (5240 MHz), Chain AC, MCS15
22980.470	49.5	-11.8	1.5	297.9	3.0	0.0	Vert	AV	0.0	37.7	54.0	-16.3	EUT On Side, Ch. 149 (5745 MHz), Chain B, 6 Mbps
15719.470	45.5	12.1	1.3	278.0	3.0	0.0	Vert	PK	0.0	57.6	74.0	-16.4	EUT On Side, Ch. 48 (5240 MHz), Chain B, 36 Mbps
20957.500	50.4	-12.8	1.5	30.0	3.0	0.0	Vert	AV	0.0	37.6	54.0	-16.4	EUT On Side, Ch. 48 (5240 MHz), Chain B, 6 Mbps
15719.250	45.4	12.1	3.5	140.0	3.0	0.0	Vert	PK	0.0	57.5	74.0	-16.5	EUT On Side, Ch. 48 (5240 MHz), Chain ABC, MCS23
15721.980	45.3	12.1	1.3	199.0	3.0	0.0	Horz	PK	0.0	57.4	74.0	-16.6	EUT Vert. Ch. 48 (5240 MHz), Chain B, 6 Mbps
15721.070	45.3	12.1	3.8	360.0	3.0	0.0	Vert	PK	0.0	57.4	74.0	-16.6	EUT On Side, Ch. 48 (5240 MHz), Chain B, MCS8 (256-QAM)
15719.240	45.3	12.1	1.3	45.0	3.0	0.0	Vert	PK	0.0	57.4	74.0	-16.6	EUT On Side, Ch. 48 (5240 MHz), Chain AB, MCS15
15538.200	45.2	11.9	1.3	214.9	3.0	0.0	Vert	PK	0.0	57.1	74.0	-16.9	EUT On Side, Ch. 36 (5180 MHz), Chain B, 6 Mbps
20718.700	49.8	-12.7	1.5	145.0	3.0	0.0	Vert	AV	0.0	37.1	54.0	-16.9	EUT On Side, Ch. 36 (5180 MHz), Chain B, 6 Mbps
15539.630	45.1	11.9	1.3	254.0	3.0	0.0	Horz	PK	0.0	57.0	74.0	-17.0	EUT Vert. Ch. 36 (5180 MHz), Chain B, 6 Mbps
11569.340	38.0	-2.4	2.0	176.0	3.0	0.0	Vert	AV	0.0	35.6	54.0	-18.4	EUT On Side, Ch. 157 (5785 MHz), Chain B, 6 Mbps
11569.720	37.4	-2.4	1.3	108.0	3.0	0.0	Horz	AV	0.0	35.0	54.0	-19.0	EUT On Side, Ch. 157 (5785 MHz), Chain B, 6 Mbps
11489.610	37.3	-2.5	1.3	110.0	3.0	0.0	Horz	AV	0.0	34.8	54.0	-19.2	EUT Vert. Ch. 149 (5745 MHz), Chain B, 6 Mbps
11649.810	35.9	-2.0	2.2	183.0	3.0	0.0	Vert	AV	0.0	33.9	54.0	-20.1	EUT On Side, Ch. 165 (5825 MHz), Chain B, 6 Mbps
11490.620	54.7	-2.5	2.3	174.0	3.0	0.0	Vert	PK	0.0	52.2	74.0	-21.8	EUT On Side, Ch. 149 (5745 MHz), Chain B, 6 Mbps
11649.990	32.9	-2.0	1.3	231.0	3.0	0.0	Horz	AV	0.0	30.9	54.0	-23.1	EUT On Side, Ch. 165 (5825 MHz), Chain B, 6 Mbps
22981.560	61.8	-11.8	1.5	297.9	3.0	0.0	Vert	PK	0.0	50.0	74.0	-24.0	EUT On Side, Ch. 149 (5745 MHz), Chain B, 6 Mbps
20958.580	62.1	-12.8	1.5	30.0	3.0	0.0	Vert	PK	0.0	49.3	74.0	-24.7	EUT On Side, Ch. 48 (5240 MHz), Chain B, 6 Mbps
11570.180	51.2	-2.4	2.0	176.0	3.0	0.0	Vert	PK	0.0	48.8	74.0	-25.2	EUT On Side, Ch. 157 (5785 MHz), Chain B, 6 Mbps
20717.960	61.2	-12.7	1.5	145.0	3.0	0.0	Vert	PK	0.0	48.5	74.0	-25.5	EUT On Side, Ch. 36 (5180 MHz), Chain B, 6 Mbps

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
11489.880	50.6	-2.5	1.3	110.0	3.0	0.0	Horz	PK	0.0	48.1	74.0	-25.9	EUT Vert. Ch. 149 (5745 MHz), Chain B, 6 Mbps
11572.330	50.3	-2.4	1.3	108.0	3.0	0.0	Horz	PK	0.0	47.9	74.0	-26.1	EUT Vert. Ch. 157 (5785 MHz), Chain B, 6 Mbps
11650.450	49.1	-2.0	2.2	183.0	3.0	0.0	Vert	PK	0.0	47.1	74.0	-26.9	EUT On Side, Ch. 165 (5825 MHz), Chain B, 6 Mbps
11648.880	45.4	-2.0	1.3	231.0	3.0	0.0	Horz	PK	0.0	43.4	74.0	-30.6	EUT Vert. Ch. 165 (5825 MHz), Chain B, 6 Mbps



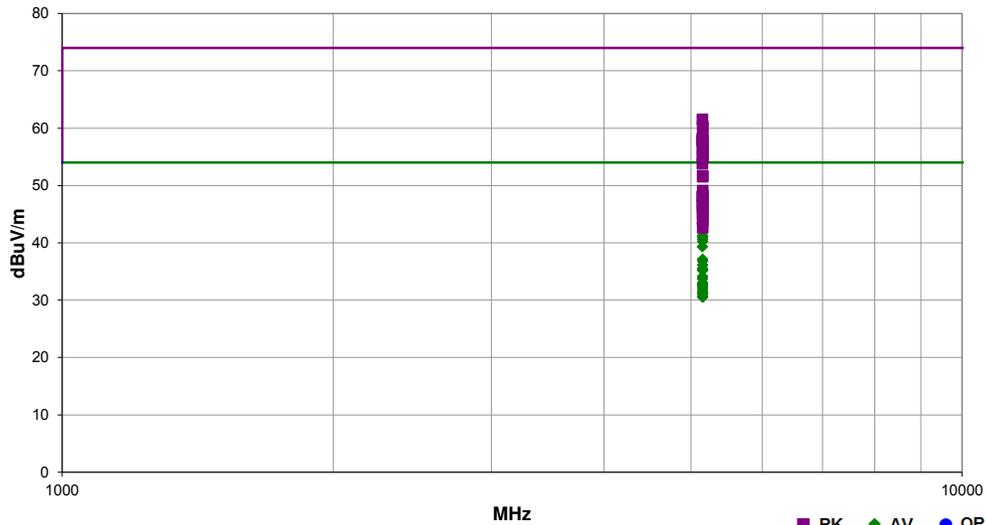
SPURIOUS RADIATED EMISSIONS

PSA-ESCI 2015.03.03
EmiR5 2015.05.29

Work Order:	VDEI0009	Date:	09/27/15	<i>Jonathan Kiefa</i>
Project:	None	Temperature:	26.2 °C	
Job Site:	TX02	Humidity:	39.7% RH	
Serial Number:	70AF02717-B385	Barometric Pres.:	1018 mbar	
EUT:	Firebox T50-W (BS5AE7W)			
Configuration:	3			
Customer:	WatchGuard Technologies, Inc.			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Continuously Transmitting			
Deviations:	None			
Comments:	5150 Band Edge. See comments for channel, EUT orientation, antenna chain, and data rate information.			

Test Specifications	Test Method
FCC 15.407:2015	ANSI C63.10:2013

Run #	215	Test Distance (m)	1	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
5149.980	49.4	8.0	2.1	141.9	1.0	0.0	Horz	AV	-9.5	47.8	54.0	-6.2	EUT On Side, Ch. 36-48 (5210 MHz), Chain B, MCS0
5149.920	46.4	8.0	2.0	147.9	1.0	0.0	Horz	AV	-9.5	44.8	54.0	-9.2	EUT On Side, Ch. 36/40 (5190 MHz), Chain B, MCS0
5148.080	45.6	8.0	1.8	96.0	1.0	0.0	Vert	AV	-9.5	44.0	54.0	-10.0	EUT On Side, Ch. 36-48 (5210 MHz), Chain B, MCS0
5149.500	45.3	8.0	1.3	345.0	1.0	0.0	Vert	AV	-9.5	43.7	54.0	-10.3	EUT Vert, Ch. 36-48 (5210 MHz), Chain B, MCS0
5149.773	45.2	8.0	2.1	136.9	1.0	0.0	Horz	AV	-9.5	43.6	54.0	-10.4	EUT On Side, Ch. 36/40 (5190 MHz), Chain B, MCS7
5147.127	45.0	8.0	1.3	348.0	1.0	0.0	Horz	AV	-9.5	43.4	54.0	-10.6	EUT Vert, Ch. 36-48 (5210 MHz), Chain B, MCS0
5148.480	44.9	8.0	1.6	43.0	1.0	0.0	Horz	AV	-9.5	43.3	54.0	-10.7	EUT Horz, Ch. 36-48 (5210 MHz), Chain B, MCS0
5149.993	44.6	8.0	2.1	163.0	1.0	0.0	Horz	AV	-9.5	43.0	54.0	-11.0	EUT Horz, Ch. 36/40 (5190 MHz), Chain B, MCS0
5146.053	63.1	8.0	2.1	141.9	1.0	0.0	Horz	PK	-9.5	61.5	74.0	-12.5	EUT On Side, Ch. 36-48 (5210 MHz), Chain B, MCS0
5149.900	42.8	8.0	1.3	286.9	1.0	0.0	Horz	AV	-9.5	41.2	54.0	-12.8	EUT Vert, Ch. 36/40 (5190 MHz), Chain B, MCS0
5149.960	42.6	8.0	3.3	339.0	1.0	0.0	Vert	AV	-9.5	41.0	54.0	-13.0	EUT Horz, Ch. 36/40 (5190 MHz), Chain B, MCS0
5149.907	42.2	8.0	1.0	64.9	1.0	0.0	Vert	AV	-9.5	40.6	54.0	-13.4	EUT Vert, Ch. 36/40 (5190 MHz), Chain B, MCS0
5149.980	61.9	8.0	2.1	136.9	1.0	0.0	Horz	PK	-9.5	60.3	74.0	-13.7	EUT On Side, Ch. 36/40 (5190 MHz), Chain B, MCS7
5149.400	41.8	8.0	1.0	140.0	1.0	0.0	Vert	AV	-9.5	40.2	54.0	-13.8	EUT Horz, Ch. 36-48 (5210 MHz), Chain B, MCS0
5149.800	61.6	8.0	2.0	147.9	1.0	0.0	Horz	PK	-9.5	60.0	74.0	-14.0	EUT On Side, Ch. 36/40 (5190 MHz), Chain B, MCS0
5146.067	40.9	8.0	2.9	130.9	1.0	0.0	Horz	AV	-9.5	39.3	54.0	-14.7	EUT On Side, Ch. 36-48 (5210 MHz), Chain B, MCS9 (256-QAM)
5148.487	59.9	8.0	2.9	130.9	1.0	0.0	Horz	PK	-9.5	58.3	74.0	-15.7	EUT On Side, Ch. 36-48 (5210 MHz), Chain B, MCS9 (256-QAM)
5147.220	59.7	8.0	1.8	96.0	1.0	0.0	Vert	PK	-9.5	58.1	74.0	-15.9	EUT On Side, Ch. 36-48 (5210 MHz), Chain B, MCS0
5149.520	59.6	8.0	2.1	163.0	1.0	0.0	Horz	PK	-9.5	58.0	74.0	-16.0	EUT Horz, Ch. 36/40 (5190 MHz), Chain B, MCS0
5146.080	59.4	8.0	1.6	43.0	1.0	0.0	Horz	PK	-9.5	57.8	74.0	-16.2	EUT Horz, Ch. 36-48 (5210 MHz), Chain B, MCS0
5147.067	59.3	8.0	1.3	345.0	1.0	0.0	Vert	PK	-9.5	57.7	74.0	-16.3	EUT Vert, Ch. 36-48 (5210 MHz), Chain B, MCS0
5149.847	38.7	8.0	2.5	112.9	1.0	0.0	Horz	AV	-9.5	37.1	54.0	-16.9	EUT On Side, Ch. 36/40 (5190 MHz), Chain B, MCS9 (256-QAM)
5147.287	58.5	8.0	1.3	348.0	1.0	0.0	Horz	PK	-9.5	56.9	74.0	-17.1	EUT Vert, Ch. 36-48 (5210 MHz), Chain B, MCS0
5149.960	38.4	8.0	1.1	51.9	1.0	0.0	Vert	AV	-9.5	36.8	54.0	-17.2	EUT On Side, Ch. 36/40 (5190 MHz), Chain B, MCS0
5149.673	58.0	8.0	3.3	339.0	1.0	0.0	Vert	PK	-9.5	56.4	74.0	-17.6	EUT Horz, Ch. 36/40 (5190 MHz), Chain B, MCS0
5149.893	57.9	8.0	1.3	286.9	1.0	0.0	Horz	PK	-9.5	56.3	74.0	-17.7	EUT Vert, Ch. 36/40 (5190 MHz), Chain B, MCS0
5149.853	37.7	8.0	1.9	166.0	1.0	0.0	Horz	AV	-9.5	36.1	54.0	-17.9	EUT Horz, Ch. 36 (5180 MHz), Chain B, MCS0
5149.673	57.4	8.0	1.0	64.9	1.0	0.0	Vert	PK	-9.5	55.8	74.0	-18.2	EUT Vert, Ch. 36/40 (5190 MHz), Chain B, MCS0
5149.833	37.1	8.0	1.9	40.9	1.0	0.0	Horz	AV	-9.5	35.5	54.0	-18.5	EUT Horz, Ch. 36 (5180 MHz), Chain B, 6 Mbps
5149.993	36.8	8.0	1.3	258.0	1.0	0.0	Horz	AV	-9.5	35.2	54.0	-18.8	EUT Vert, Ch. 36 (5180 MHz), Chain B, 6 Mbps
5149.827	36.8	8.0	1.5	166.0	1.0	0.0	Horz	AV	-9.5	35.2	54.0	-18.8	EUT Horz, Ch. 36 (5180 MHz), Chain B, 36 Mbps
5149.153	56.7	8.0	1.9	52.9	1.0	0.0	Horz	PK	-9.5	55.1	74.0	-18.9	EUT Horz, Ch. 36 (5180 MHz), Chain B, 54 Mbps
5149.960	56.5	8.0	2.2	48.0	1.0	0.0	Horz	PK	-9.5	54.9	74.0	-19.1	EUT Horz, Ch. 36 (5180 MHz), Chain B, MCS7
5149.753	56.4	8.0	2.5	112.9	1.0	0.0	Horz	PK	-9.5	54.8	74.0	-19.2	EUT On Side, Ch. 36/40 (5190 MHz), Chain B, MCS9 (256-QAM)
5149.827	35.7	8.0	2.2	48.0	1.0	0.0	Horz	AV	-9.5	34.1	54.0	-19.9	EUT Horz, Ch. 36 (5180 MHz), Chain B, MCS7
5147.053	55.4	8.0	1.0	140.0	1.0	0.0	Vert	PK	-9.5	53.8	74.0	-20.2	EUT Horz, Ch. 36-48 (5210 MHz), Chain B, MCS0
5149.207	35.3	8.0	1.9	52.9	1.0	0.0	Horz	AV	-9.5	33.7	54.0	-20.3	EUT Vert, Ch. 36 (5180 MHz), Chain B, 54 Mbps
5149.613	34.6	8.0	1.3	355.0	1.0	0.0	Vert	AV	-9.5	33.0	54.0	-21.0	EUT Vert, Ch. 36 (5180 MHz), Chain B, 6 Mbps
5148.993	34.3	8.0	1.3	92.0	1.0	0.0	Vert	AV	-9.5	32.7	54.0	-21.3	EUT Horz, Ch. 36 (5180 MHz), Chain B, 6 Mbps
5149.980	34.1	8.0	4.0	314.0	1.0	0.0	Horz	AV	-9.5	32.5	54.0	-21.5	EUT Horz, Ch. 36 (5180 MHz), Chain C, MCS8 (256-QAM)

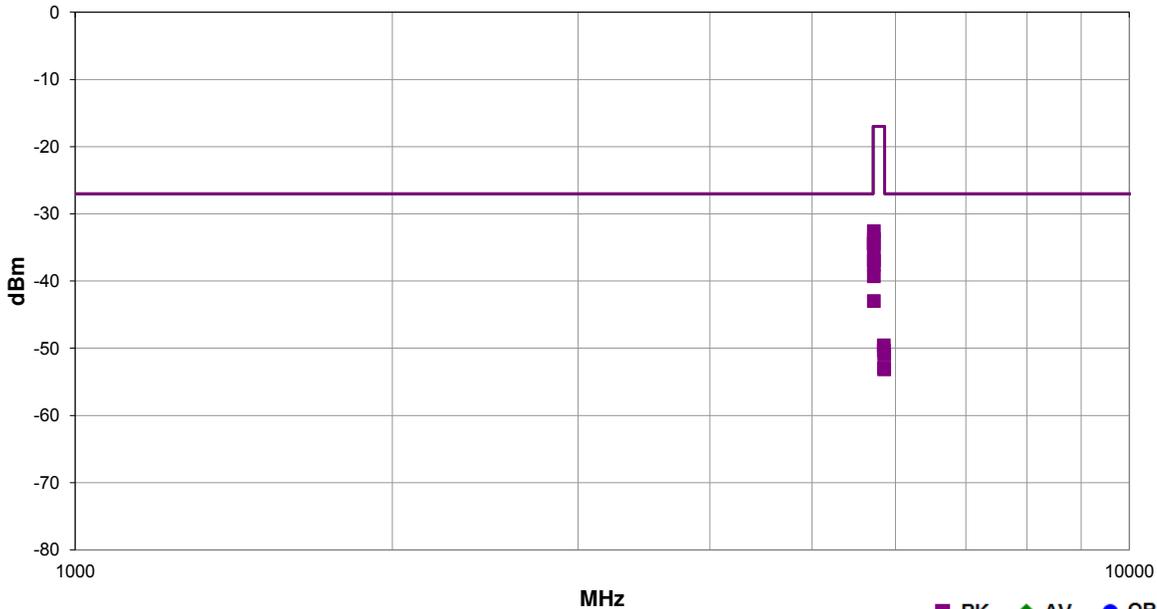
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
5149.100	34.1	8.0	2.4	45.0	1.0	0.0	Horz	AV	-9.5	32.5	54.0	-21.5	EUT Horz, Ch. 36 (5180 MHz), Chain BC, MCS15
5149.540	33.7	8.0	2.2	151.0	1.0	0.0	Horz	AV	-9.5	32.1	54.0	-21.9	EUT Horz, Ch. 36 (5180 MHz), Chain A, MCS8 (256-QAM)
5149.553	33.3	8.0	1.3	48.0	1.0	0.0	Vert	AV	-9.5	31.7	54.0	-22.3	EUT On Side, Ch. 36 (5180 MHz), Chain B, 6 Mbps
5149.527	53.3	8.0	1.1	51.9	1.0	0.0	Vert	PK	-9.5	51.7	74.0	-22.3	EUT On Side, Ch. 36/40 (5190 MHz), Chain B, MCS0
5149.627	53.1	8.0	2.4	45.0	1.0	0.0	Horz	PK	-9.5	51.5	74.0	-22.5	EUT Horz, Ch. 36 (5180 MHz), Chain BC, MCS15
5149.880	32.9	8.0	1.5	94.9	1.0	0.0	Horz	AV	-9.5	31.3	54.0	-22.7	EUT Horz, Ch. 36 (5180 MHz), Chain AB, MCS15
5149.880	32.8	8.0	2.2	163.0	1.0	0.0	Horz	AV	-9.5	31.2	54.0	-22.8	EUT Horz, Ch. 36 (5180 MHz), Chain B, MCS8 (256-QAM)
5149.993	32.6	8.0	2.6	204.0	1.0	0.0	Horz	AV	-9.5	31.0	54.0	-23.0	EUT Horz, Ch. 36 (5180 MHz), Chain ABC, MCS23
5149.987	32.2	8.0	1.3	298.9	1.0	0.0	Horz	AV	-9.5	30.6	54.0	-23.4	EUT On Side, Ch. 36 (5180 MHz), Chain B, 6 Mbps
5149.953	32.1	8.0	3.4	307.0	1.0	0.0	Horz	AV	-9.5	30.5	54.0	-23.5	EUT Horz, Ch. 36 (5180 MHz), Chain AC, MCS15
5149.820	50.7	8.0	1.9	156.0	1.0	0.0	Horz	PK	-9.5	49.1	74.0	-24.9	EUT Horz, Ch. 36 (5180 MHz), Chain B, MCS0
5149.593	49.9	8.0	1.9	40.9	1.0	0.0	Horz	PK	-9.5	48.3	74.0	-25.7	EUT Horz, Ch. 36 (5180 MHz), Chain B, 6 Mbps
5148.833	49.7	8.0	4.0	314.0	1.0	0.0	Horz	PK	-9.5	48.1	74.0	-25.9	EUT Horz, Ch. 36 (5180 MHz), Chain C, MCS8 (256-QAM)
5146.667	49.6	8.0	1.5	156.0	1.0	0.0	Horz	PK	-9.5	48.0	74.0	-26.0	EUT Horz, Ch. 36 (5180 MHz), Chain B, 36 Mbps
5149.660	49.5	8.0	2.2	163.0	1.0	0.0	Horz	PK	-9.5	47.9	74.0	-26.1	EUT Horz, Ch. 36 (5180 MHz), Chain B, MCS8 (256-QAM)
5149.980	48.6	8.0	1.3	258.0	1.0	0.0	Horz	PK	-9.5	47.0	74.0	-27.0	EUT Horz, Ch. 36 (5180 MHz), Chain B, 6 Mbps
5148.840	48.5	8.0	3.4	307.0	1.0	0.0	Horz	PK	-9.5	46.9	74.0	-27.1	EUT Horz, Ch. 36 (5180 MHz), Chain AC, MCS15
5148.333	48.0	8.0	2.2	151.0	1.0	0.0	Horz	PK	-9.5	46.4	74.0	-27.6	EUT Horz, Ch. 36 (5180 MHz), Chain A, MCS8 (256-QAM)
5147.980	47.5	8.0	1.5	94.9	1.0	0.0	Horz	PK	-9.5	45.9	74.0	-28.1	EUT Horz, Ch. 36 (5180 MHz), Chain AB, MCS15
5149.893	47.0	8.0	1.3	92.0	1.0	0.0	Vert	PK	-9.5	45.4	74.0	-28.6	EUT Horz, Ch. 36 (5180 MHz), Chain B, 6 Mbps
5149.960	46.6	8.0	1.3	355.0	1.0	0.0	Vert	PK	-9.5	45.0	74.0	-29.0	EUT Horz, Ch. 36 (5180 MHz), Chain B, 6 Mbps
5149.873	45.8	8.0	1.3	48.0	1.0	0.0	Vert	PK	-9.5	44.2	74.0	-29.8	EUT On Side, Ch. 36 (5180 MHz), Chain B, 6 Mbps
5149.547	45.4	8.0	2.6	204.0	1.0	0.0	Horz	PK	-9.5	43.8	74.0	-30.2	EUT Horz, Ch. 36 (5180 MHz), Chain ABC, MCS23
5149.573	44.2	8.0	1.3	298.9	1.0	0.0	Horz	PK	-9.5	42.6	74.0	-31.4	EUT On Side, Ch. 36 (5180 MHz), Chain B, 6 Mbps

SPURIOUS RADIATED EMISSIONS

Work Order:	VDEI0009	Date:	09/27/15	
Project:	None	Temperature:	26.2 °C	
Job Site:	TX02	Humidity:	39.7% RH	
Serial Number:	70AF02717-B385	Barometric Pres.:	1018 mbar	
EUT:	Firebox T50-W (BS5AE7W)			
Configuration:	3			
Customer:	WatchGuard Technologies, Inc.			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Continuously Transmitting			
Deviations:	None			
Comments:	5725 and 5850 Band Edges. See comments for channel, EUT orientation, antenna chain, and data rate information.			

Test Specifications	Test Method
FCC 15.407:2015	ANSI C63.10:2013

Run #	216	Test Distance (m)	1	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
5724.247	1.8	134.0	Horz	PK	5.52E-07	-32.6	-17.0	-15.6	EUT On Side, Ch. 149/153 (5755 MHz), Chain B, MCS9 (256-QAM)
5724.553	2.0	39.9	Horz	PK	4.19E-07	-33.8	-17.0	-16.8	EUT Horz, Ch. 149 (5745 MHz), Chain B, 54 Mbps
5722.227	1.3	196.9	Horz	PK	3.56E-07	-34.5	-17.0	-17.5	EUT On Side, Ch. 149-161 (5775 MHz), Chain B, MCS9 (256-QAM)
5724.913	1.4	156.0	Horz	PK	2.71E-07	-35.7	-17.0	-18.7	EUT Horz, Ch. 149 (5745 MHz), Chain B, MCS0
5724.880	2.0	151.0	Horz	PK	2.01E-07	-37.0	-17.0	-20.0	EUT Horz, Ch. 149 (5745 MHz), Chain B, 6 Mbps
5724.967	1.3	153.0	Horz	PK	1.75E-07	-37.6	-17.0	-20.6	EUT Horz, Ch. 149 (5745 MHz), Chain B, 36 Mbps
5724.647	1.4	159.0	Horz	PK	1.18E-07	-39.3	-17.0	-22.3	EUT Horz, Ch. 149 (5745 MHz), Chain B, MCS8 (256-QAM)
5724.553	1.3	39.0	Horz	PK	5.04E-08	-43.0	-17.0	-26.0	EUT Horz, Ch. 149 (5745 MHz), Chain B, MCS7
5850.827	1.3	129.9	Horz	PK	1.11E-08	-49.6	-17.0	-32.6	EUT Horz, Ch. 165 (5825 MHz), Chain B, 36 Mbps
5850.473	1.3	136.9	Horz	PK	9.20E-09	-50.4	-17.0	-33.4	EUT On Side, Ch. 149-161 (5775 MHz), Chain B, MCS9 (256-QAM)
5853.933	1.3	33.9	Horz	PK	8.04E-09	-50.9	-17.0	-33.9	EUT Horz, Ch. 165 (5825 MHz), Chain B, 6 Mbps
5851.820	1.3	243.0	Horz	PK	5.06E-09	-53.0	-17.0	-36.0	EUT Horz, Ch. 165 (5825 MHz), Chain B, MCS8 (256-QAM)
5853.947	1.3	177.9	Horz	PK	4.85E-09	-53.1	-17.0	-36.1	EUT On Side, Ch. 157/161 (5795 MHz), Chain B, MCS9 (256-QAM)

FREQUENCY STABILITY

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 DESCRIPTION

A direct connect measurement was made between the EUT's antenna cable and a spectrum analyzer. The spectrum analyzer is equipped with a precision frequency reference that exceeds the stability requirement of the EUT.

Measurements were made at the edges of the main transmit bands as called out on the data sheets. Testing was done with a modulated signal; therefore, the lowest signal data rate was tested.

The primary supply voltage was varied from 85 % to 115% of the nominal voltage. Using a temperature chamber, the transmit frequency was recorded at the extremes of the specified temperature range (-30 ° to +50° C) and at 10°C intervals.

Per the requirements of FCC 15.407:

"Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual."

No specific limits are provided in either FCC 15.407, the product-specific rule part, or FCC 2.1055, the equipment authorization procedure for testing frequency stability. While there are no limits called out, any results less than 100ppm will still allow the radio to operate within the band.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Spectrum Analyzer	Agilent	N9010A	AFL	9/20/2014	9/20/2015
Generator - Signal	Agilent	N5173B	TIW	7/15/2014	7/15/2017
Attenuator	Fairview Microwave	SA4018-20	TQY	2/27/2015	2/27/2016
Block - DC	Fairview Microwave	SD3379	AMM	2/27/2015	2/27/2016
Power Supply - DC	B&K Precision	9110	TQI	NCR	NCR
Chamber - Temperature/Humidity	Cincinnati Sub Zero (CSZ)	ZPH-8-2-SCT/AC	TBH	NCR	NCR
Thermometer	Omegaette	HH311	DTX	4/3/2015	4/3/2018
Meter - Multimeter	Fluke	77-IV	MLT	9/25/2014	9/25/2017

FREQUENCY STABILITY



EUT:	Firebox T50-W (BS5AE7W)	Work Order:	VDEI0009
Serial Number:	70AF00069-3EB6	Date:	08/12/15
Customer:	WatchGuard Technologies, Inc.	Temperature:	24.8°C
Attendees:	None	Relative Humidity:	46%
Customer Project:	None	Bar. Pressure:	1019 mbar
Tested By:	Jonathan Kiefer	Job Site:	TX09
Power:	48 VDC	Configuration:	2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.407:2015	ANSI C63.10:2013

COMMENTS

2x2 MIMO mode, Chain AB (Chains 0 and 1). Tested at Channel 36 (5180 MHz) and Channel 165 (5825 MHz). The EUT was tested with the fundamental modulated while under test.

DEVIATIONS FROM TEST STANDARD

None

RESULTS

	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
Chain A					
802.11(n) HT, MCS8					
5150 MHz - 5250 MHz - Low Channel, 5180 MHz					
Voltage: 115%	5180.025	5180	4.8	100	Pass
Voltage: 100%	5180.025	5180	4.8	100	Pass
Voltage: 85%	5180.025	5180	4.8	100	Pass
Temperature: +50°	5180.025	5180	4.8	100	Pass
Temperature: +40°	5180.025	5180	4.8	100	Pass
Temperature: +30°	5180.025	5180	4.8	100	Pass
Temperature: +20°	5180.025	5180	4.8	100	Pass
Temperature: +10°	5180.05	5180	9.7	100	Pass
Temperature: 0°	5180.05	5180	9.7	100	Pass
Temperature: -10°	5180.075	5180	14.5	100	Pass
Temperature: -20°	5180.075	5180	14.5	100	Pass
Temperature: -30°	5180.075	5180	14.5	100	Pass
5725 MHz - 5850 MHz - High Channel, 5825 MHz					
Voltage: 115%	5824.975	5825	4.3	100	Pass
Voltage: 100%	5824.975	5825	4.3	100	Pass
Voltage: 85%	5824.975	5825	4.3	100	Pass
Temperature: +50°	5825.025	5825	4.3	100	Pass
Temperature: +40°	5825	5825	0	100	Pass
Temperature: +30°	5825	5825	0	100	Pass
Temperature: +20°	5825	5825	0	100	Pass
Temperature: +10°	5825.025	5825	4.3	100	Pass
Temperature: 0°	5825.05	5825	8.6	100	Pass
Temperature: -10°	5825.05	5825	8.6	100	Pass
Temperature: -20°	5825.075	5825	12.9	100	Pass
Temperature: -30°	5825.075	5825	12.9	100	Pass
Chain B					

FREQUENCY STABILITY



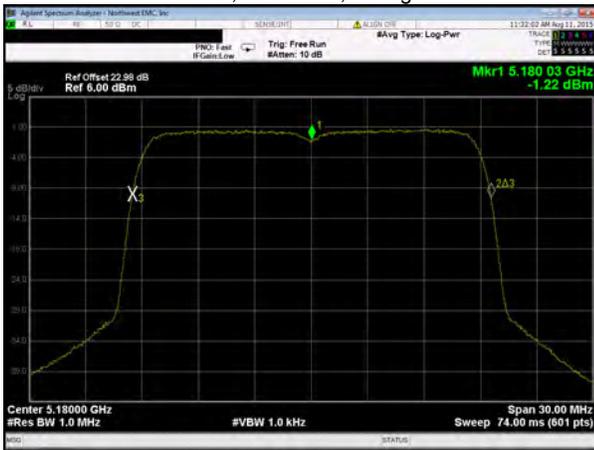
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
802.11(n) HT, MCS8					
5150 MHz - 5250 MHz - Low Channel, 5180 MHz					
Voltage: 115%	5180.025	5180	4.8	100	Pass
Voltage: 100%	5180.025	5180	4.8	100	Pass
Voltage: 85%	5180.025	5180	4.8	100	Pass
Temperature: +50°	5180.025	5180	4.8	100	Pass
Temperature: +40°	5180.025	5180	4.8	100	Pass
Temperature: +30°	5180	5180	0	100	Pass
Temperature: +20°	5180.025	5180	4.8	100	Pass
Temperature: +10°	5180.05	5180	9.7	100	Pass
Temperature: 0°	5180.05	5180	9.7	100	Pass
Temperature: -10°	5180.075	5180	14.5	100	Pass
Temperature: -20°	5180.075	5180	14.5	100	Pass
Temperature: -30°	5180.075	5180	14.5	100	Pass
5725 MHz - 5850 MHz - High Channel, 5825 MHz					
Voltage: 115%	5825	5825	0	100	Pass
Voltage: 100%	5825	5825	0	100	Pass
Voltage: 85%	5825	5825	0	100	Pass
Temperature: +50°	5825.025	5825	4.3	100	Pass
Temperature: +40°	5825	5825	0	100	Pass
Temperature: +30°	5825.025	5825	4.3	100	Pass
Temperature: +20°	5825	5825	0	100	Pass
Temperature: +10°	5825.025	5825	4.3	100	Pass
Temperature: 0°	5825.025	5825	4.3	100	Pass
Temperature: -10°	5825.05	5825	8.6	100	Pass
Temperature: -20°	5825.075	5825	12.9	100	Pass
Temperature: -30°	5825.075	5825	12.9	100	Pass

Jonathan Kiefer

Tested By

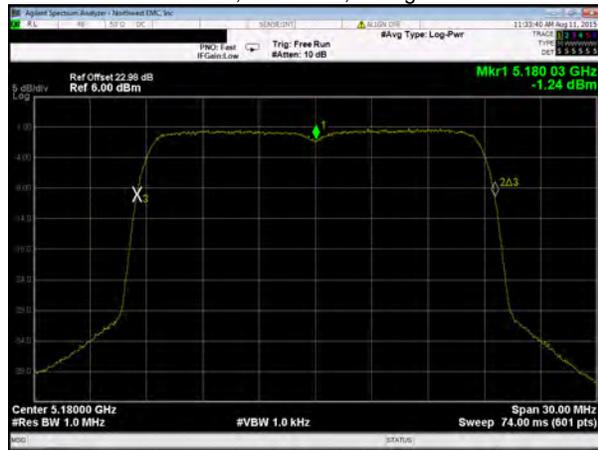
FREQUENCY STABILITY

Chain A, 802.11(n) HT, MCS8, 5150 MHz - 5250 MHz - Low
Channel, 5180 MHz, Voltage: 115%



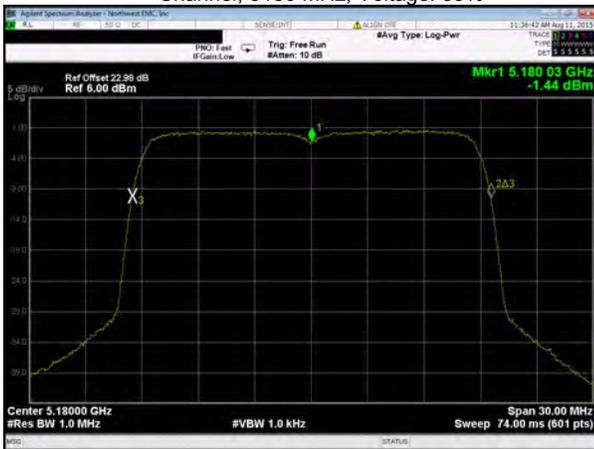
Measured Value (MHz)	5180.025
Assigned Value (MHz)	5180
Error (ppm)	4.8
Limit (ppm)	100
Results	Pass

Chain A, 802.11(n) HT, MCS8, 5150 MHz - 5250 MHz - Low
Channel, 5180 MHz, Voltage: 100%



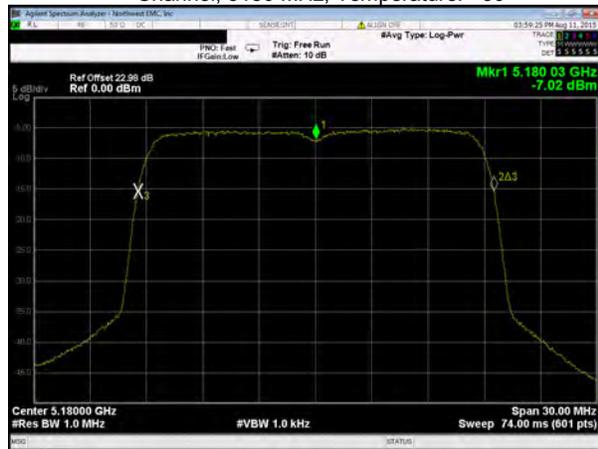
Measured Value (MHz)	5180.025
Assigned Value (MHz)	5180
Error (ppm)	4.8
Limit (ppm)	100
Results	Pass

Chain A, 802.11(n) HT, MCS8, 5150 MHz - 5250 MHz - Low
Channel, 5180 MHz, Voltage: 85%



Measured Value (MHz)	5180.025
Assigned Value (MHz)	5180
Error (ppm)	4.8
Limit (ppm)	100
Results	Pass

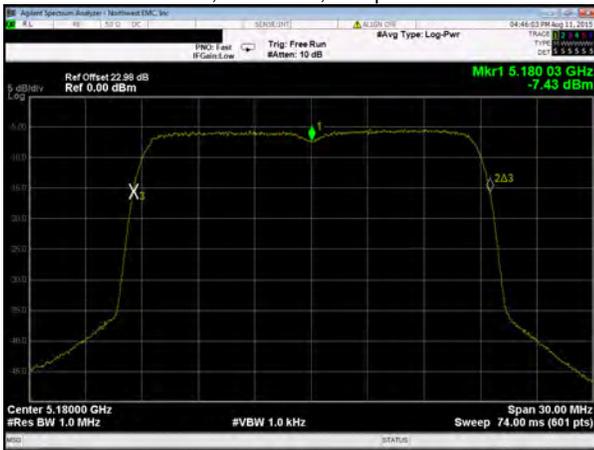
Chain A, 802.11(n) HT, MCS8, 5150 MHz - 5250 MHz - Low
Channel, 5180 MHz, Temperature: +50°



Measured Value (MHz)	5180.025
Assigned Value (MHz)	5180
Error (ppm)	4.8
Limit (ppm)	100
Results	Pass

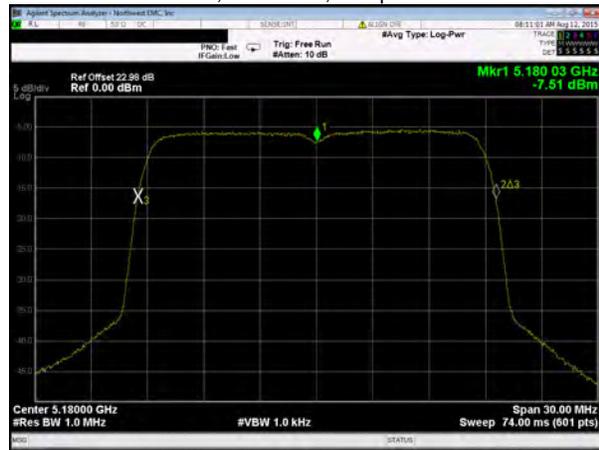
FREQUENCY STABILITY

Chain A, 802.11(n) HT, MCS8, 5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: +40°



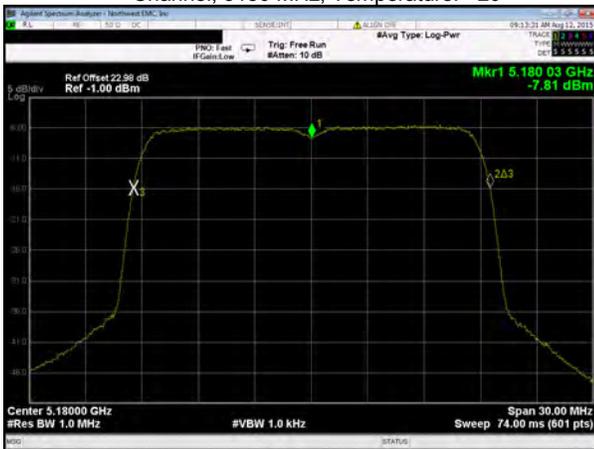
Measured Value (MHz)	5180.025
Assigned Value (MHz)	5180
Error (ppm)	4.8
Limit (ppm)	100
Results	Pass

Chain A, 802.11(n) HT, MCS8, 5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: +30°



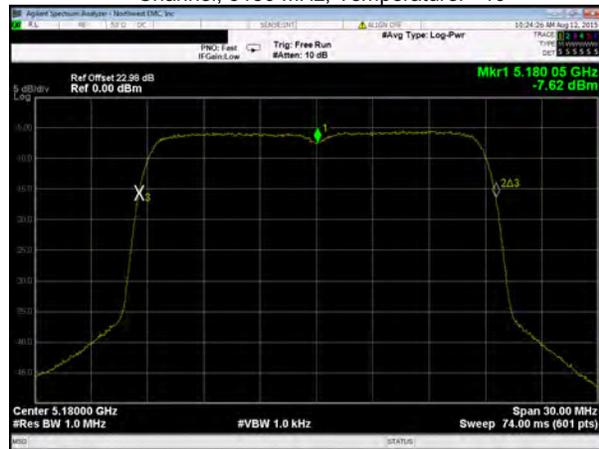
Measured Value (MHz)	5180.025
Assigned Value (MHz)	5180
Error (ppm)	4.8
Limit (ppm)	100
Results	Pass

Chain A, 802.11(n) HT, MCS8, 5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: +20°



Measured Value (MHz)	5180.025
Assigned Value (MHz)	5180
Error (ppm)	4.8
Limit (ppm)	100
Results	Pass

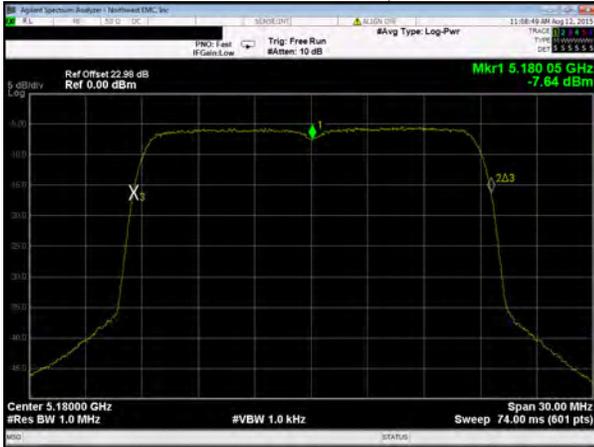
Chain A, 802.11(n) HT, MCS8, 5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: +10°



Measured Value (MHz)	5180.05
Assigned Value (MHz)	5180
Error (ppm)	9.7
Limit (ppm)	100
Results	Pass

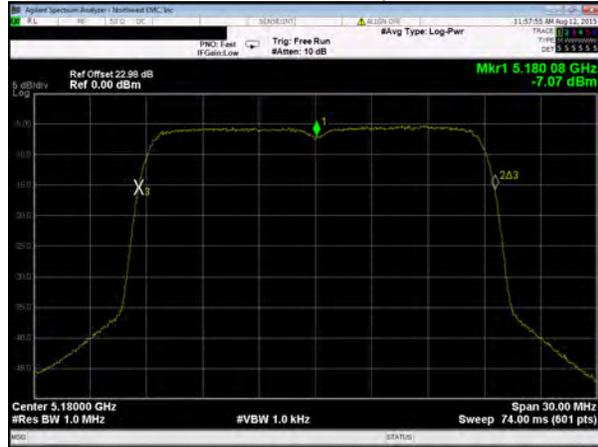
FREQUENCY STABILITY

Chain A, 802.11(n) HT, MCS8, 5150 MHz - 5250 MHz - Low
Channel, 5180 MHz, Temperature: 0°



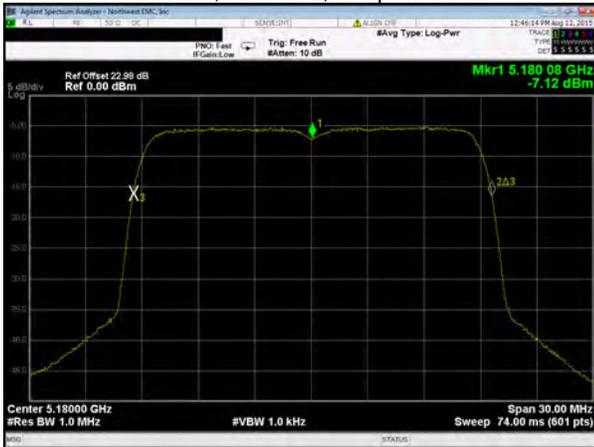
Measured Value (MHz)	5180.05
Assigned Value (MHz)	5180
Error (ppm)	9.7
Limit (ppm)	100
Results	Pass

Chain A, 802.11(n) HT, MCS8, 5150 MHz - 5250 MHz - Low
Channel, 5180 MHz, Temperature: -10°



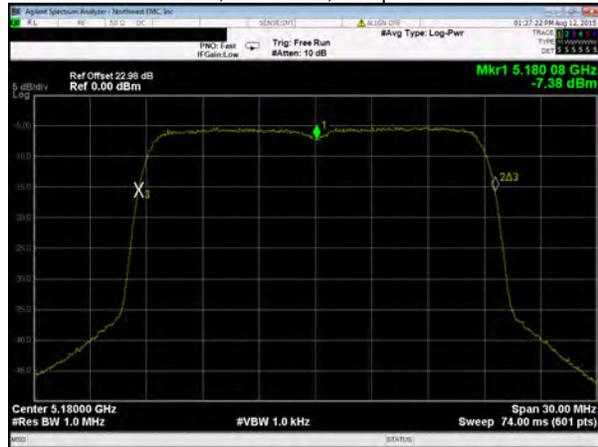
Measured Value (MHz)	5180.075
Assigned Value (MHz)	5180
Error (ppm)	14.5
Limit (ppm)	100
Results	Pass

Chain A, 802.11(n) HT, MCS8, 5150 MHz - 5250 MHz - Low
Channel, 5180 MHz, Temperature: -20°



Measured Value (MHz)	5180.075
Assigned Value (MHz)	5180
Error (ppm)	14.5
Limit (ppm)	100
Results	Pass

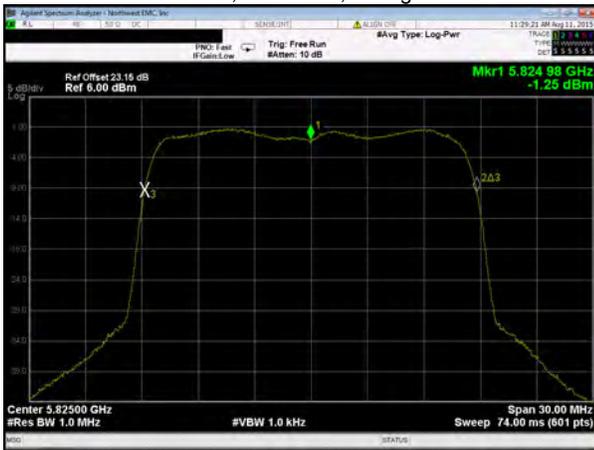
Chain A, 802.11(n) HT, MCS8, 5150 MHz - 5250 MHz - Low
Channel, 5180 MHz, Temperature: -30°



Measured Value (MHz)	5180.075
Assigned Value (MHz)	5180
Error (ppm)	14.5
Limit (ppm)	100
Results	Pass

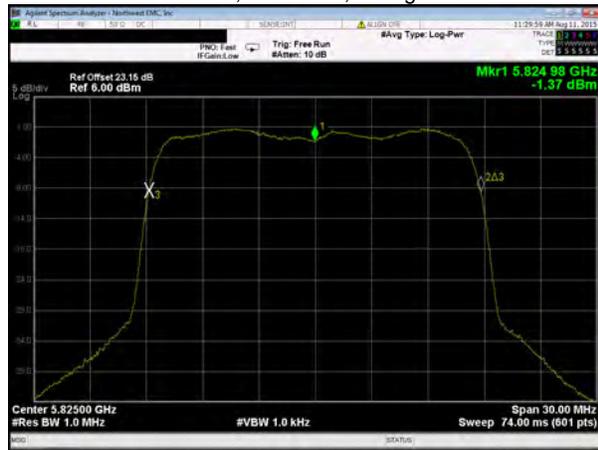
FREQUENCY STABILITY

Chain A, 802.11(n) HT, MCS8, 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Voltage: 115%



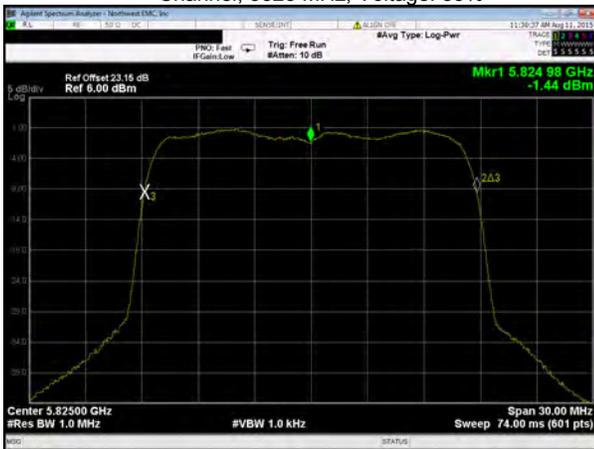
Measured Value (MHz)	5824.975
Assigned Value (MHz)	5825
Error (ppm)	4.3
Limit (ppm)	100
Results	Pass

Chain A, 802.11(n) HT, MCS8, 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Voltage: 100%



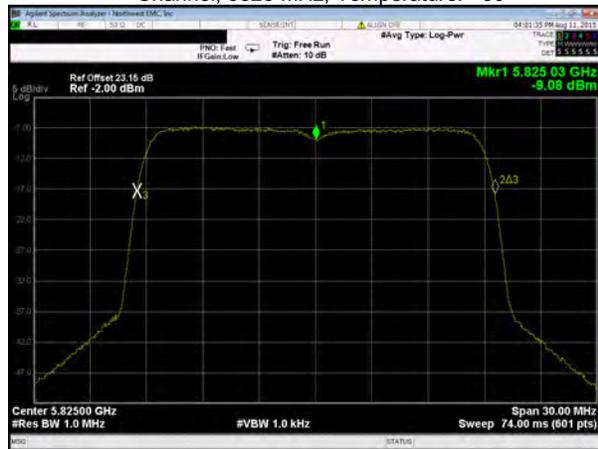
Measured Value (MHz)	5824.975
Assigned Value (MHz)	5825
Error (ppm)	4.3
Limit (ppm)	100
Results	Pass

Chain A, 802.11(n) HT, MCS8, 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Voltage: 85%



Measured Value (MHz)	5824.975
Assigned Value (MHz)	5825
Error (ppm)	4.3
Limit (ppm)	100
Results	Pass

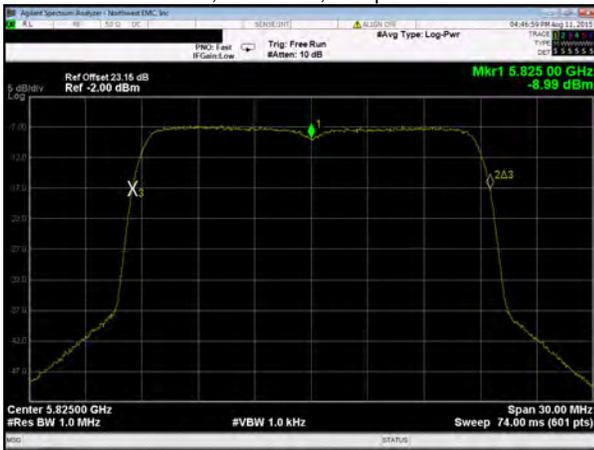
Chain A, 802.11(n) HT, MCS8, 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Temperature: +50°



Measured Value (MHz)	5825.025
Assigned Value (MHz)	5825
Error (ppm)	4.3
Limit (ppm)	100
Results	Pass

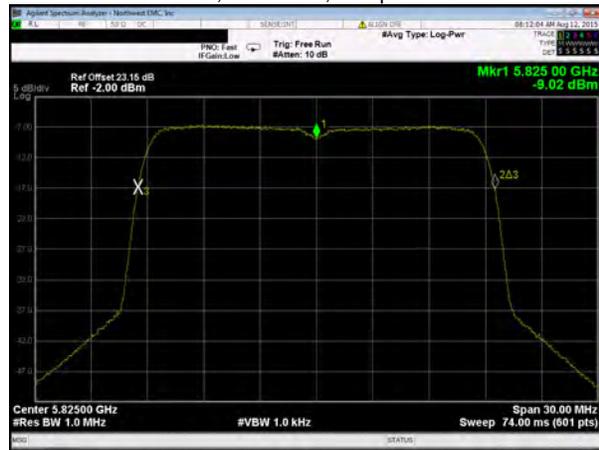
FREQUENCY STABILITY

Chain A, 802.11(n) HT, MCS8, 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Temperature: +40°



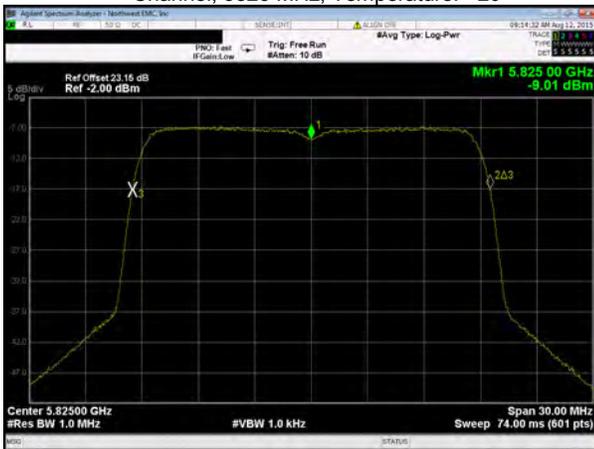
Measured Value (MHz)	5825
Assigned Value (MHz)	5825
Error (ppm)	0
Limit (ppm)	100
Results	Pass

Chain A, 802.11(n) HT, MCS8, 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Temperature: +30°



Measured Value (MHz)	5825
Assigned Value (MHz)	5825
Error (ppm)	0
Limit (ppm)	100
Results	Pass

Chain A, 802.11(n) HT, MCS8, 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Temperature: +20°



Measured Value (MHz)	5825
Assigned Value (MHz)	5825
Error (ppm)	0
Limit (ppm)	100
Results	Pass

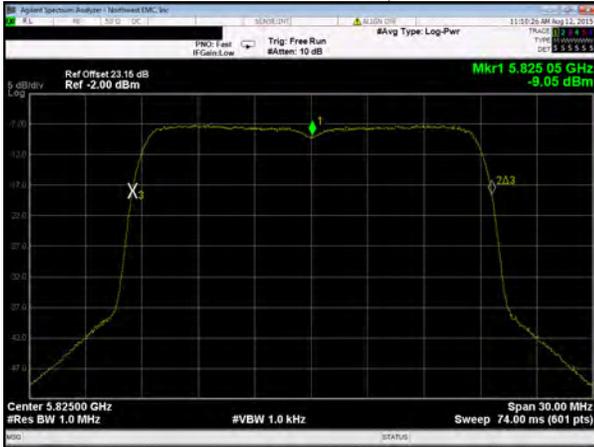
Chain A, 802.11(n) HT, MCS8, 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Temperature: +10°



Measured Value (MHz)	5825.025
Assigned Value (MHz)	5825
Error (ppm)	4.3
Limit (ppm)	100
Results	Pass

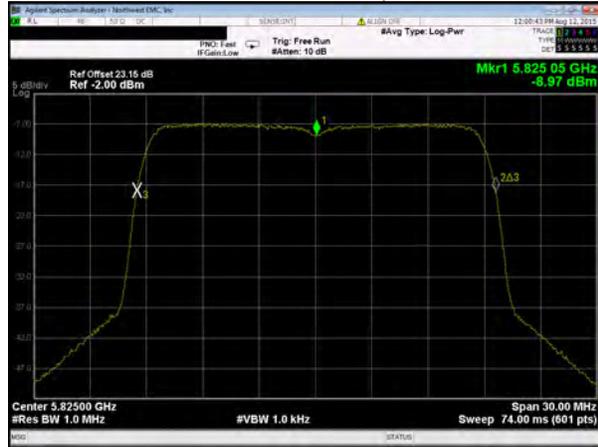
FREQUENCY STABILITY

Chain A, 802.11(n) HT, MCS8, 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Temperature: 0°



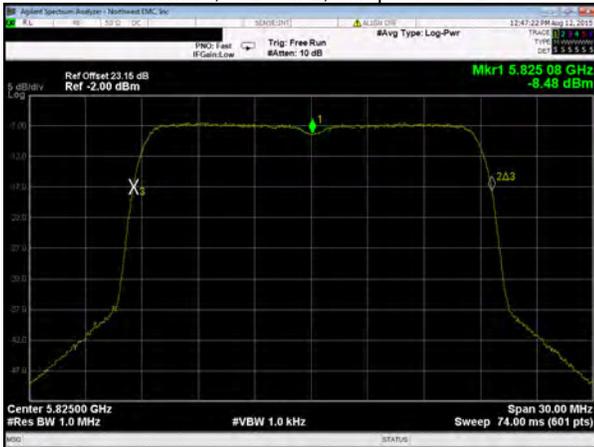
Measured Value (MHz)	5825.05
Assigned Value (MHz)	5825
Error (ppm)	8.6
Limit (ppm)	100
Results	Pass

Chain A, 802.11(n) HT, MCS8, 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Temperature: -10°



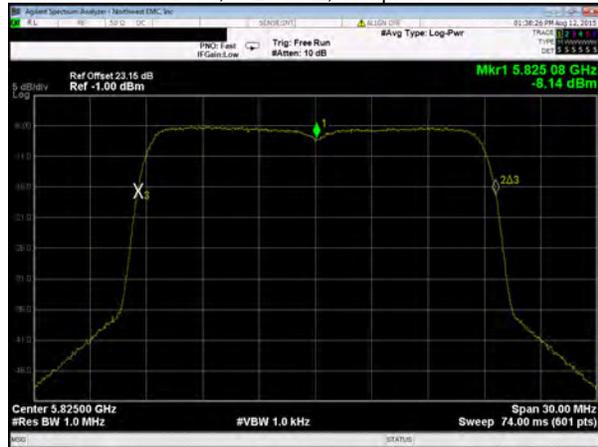
Measured Value (MHz)	5825.05
Assigned Value (MHz)	5825
Error (ppm)	8.6
Limit (ppm)	100
Results	Pass

Chain A, 802.11(n) HT, MCS8, 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Temperature: -20°



Measured Value (MHz)	5825.075
Assigned Value (MHz)	5825
Error (ppm)	12.9
Limit (ppm)	100
Results	Pass

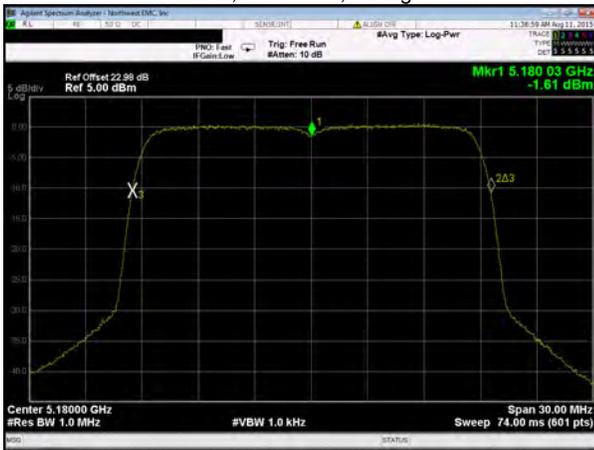
Chain A, 802.11(n) HT, MCS8, 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Temperature: -30°



Measured Value (MHz)	5825.075
Assigned Value (MHz)	5825
Error (ppm)	12.9
Limit (ppm)	100
Results	Pass

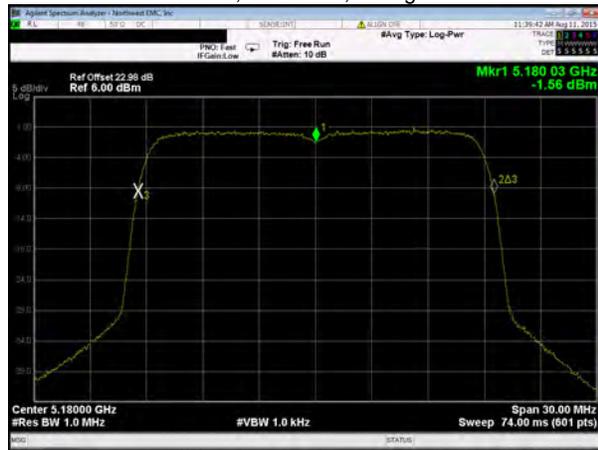
FREQUENCY STABILITY

Chain B, 802.11(n) HT, MCS8, 5150 MHz - 5250 MHz - Low
Channel, 5180 MHz, Voltage: 115%



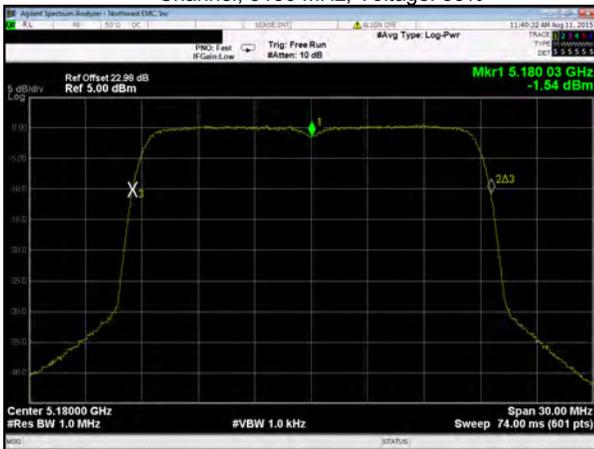
Measured Value (MHz)	5180.025
Assigned Value (MHz)	5180
Error (ppm)	4.8
Limit (ppm)	100
Results	Pass

Chain B, 802.11(n) HT, MCS8, 5150 MHz - 5250 MHz - Low
Channel, 5180 MHz, Voltage: 100%



Measured Value (MHz)	5180.025
Assigned Value (MHz)	5180
Error (ppm)	4.8
Limit (ppm)	100
Results	Pass

Chain B, 802.11(n) HT, MCS8, 5150 MHz - 5250 MHz - Low
Channel, 5180 MHz, Voltage: 85%



Measured Value (MHz)	5180.025
Assigned Value (MHz)	5180
Error (ppm)	4.8
Limit (ppm)	100
Results	Pass

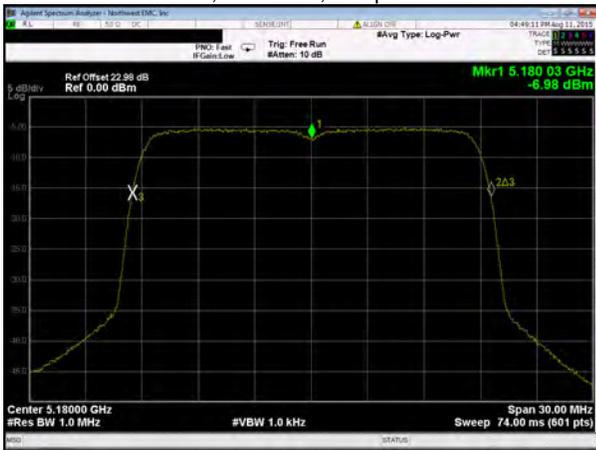
Chain B, 802.11(n) HT, MCS8, 5150 MHz - 5250 MHz - Low
Channel, 5180 MHz, Temperature: +50°



Measured Value (MHz)	5180.025
Assigned Value (MHz)	5180
Error (ppm)	4.8
Limit (ppm)	100
Results	Pass

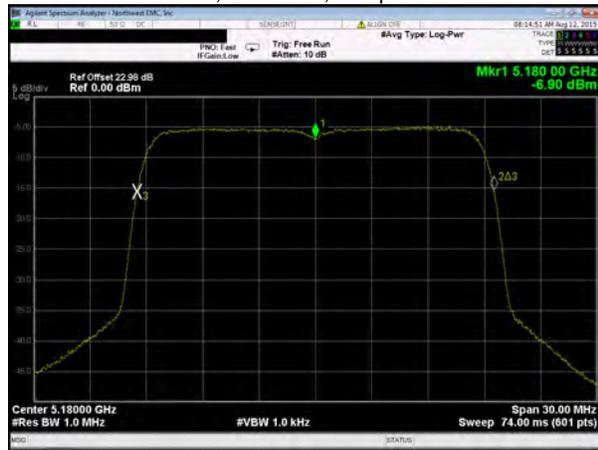
FREQUENCY STABILITY

Chain B, 802.11(n) HT, MCS8, 5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: +40°



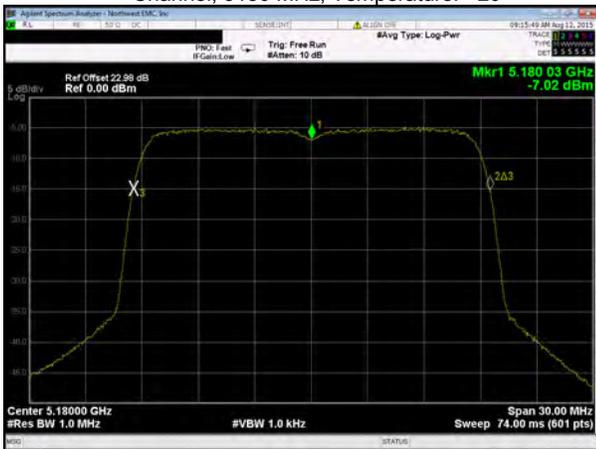
Measured Value (MHz)	5180.025
Assigned Value (MHz)	5180
Error (ppm)	4.8
Limit (ppm)	100
Results	Pass

Chain B, 802.11(n) HT, MCS8, 5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: +30°



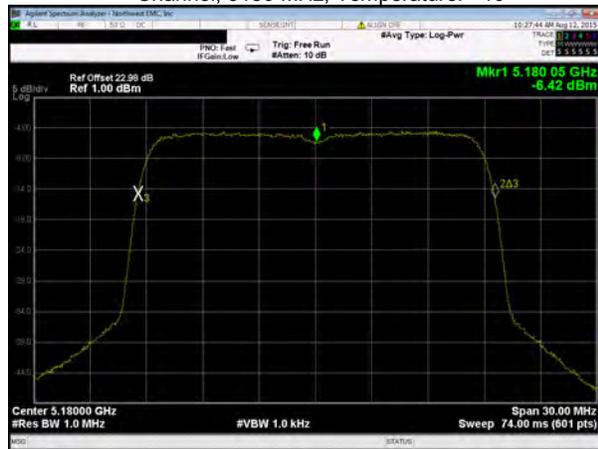
Measured Value (MHz)	5180
Assigned Value (MHz)	5180
Error (ppm)	0
Limit (ppm)	100
Results	Pass

Chain B, 802.11(n) HT, MCS8, 5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: +20°



Measured Value (MHz)	5180.025
Assigned Value (MHz)	5180
Error (ppm)	4.8
Limit (ppm)	100
Results	Pass

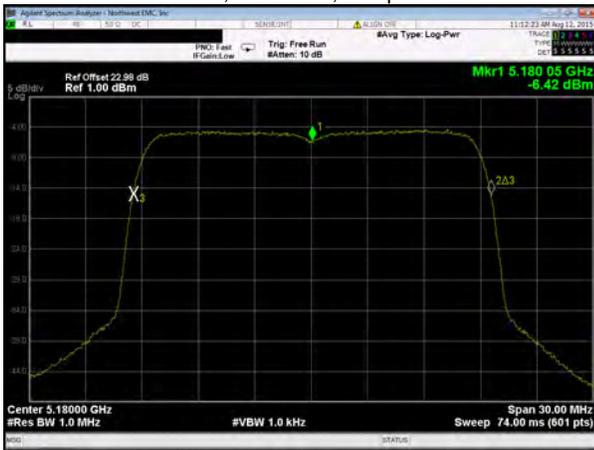
Chain B, 802.11(n) HT, MCS8, 5150 MHz - 5250 MHz - Low Channel, 5180 MHz, Temperature: +10°



Measured Value (MHz)	5180.05
Assigned Value (MHz)	5180
Error (ppm)	9.7
Limit (ppm)	100
Results	Pass

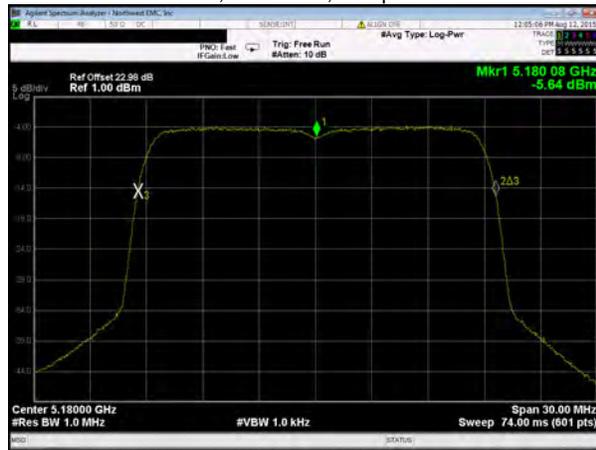
FREQUENCY STABILITY

Chain B, 802.11(n) HT, MCS8, 5150 MHz - 5250 MHz - Low
Channel, 5180 MHz, Temperature: 0°



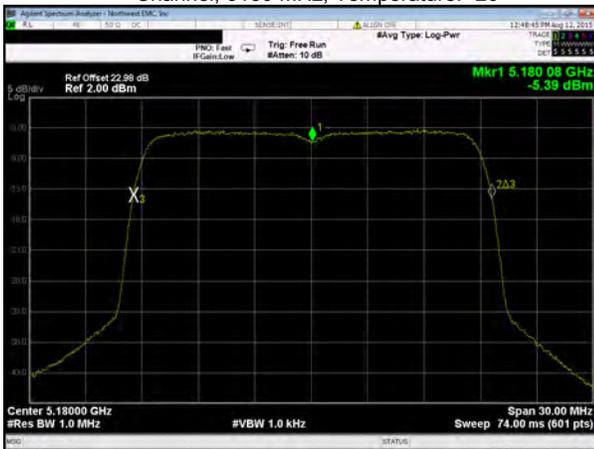
Measured Value (MHz)	5180.05
Assigned Value (MHz)	5180
Error (ppm)	9.7
Limit (ppm)	100
Results	Pass

Chain B, 802.11(n) HT, MCS8, 5150 MHz - 5250 MHz - Low
Channel, 5180 MHz, Temperature: -10°



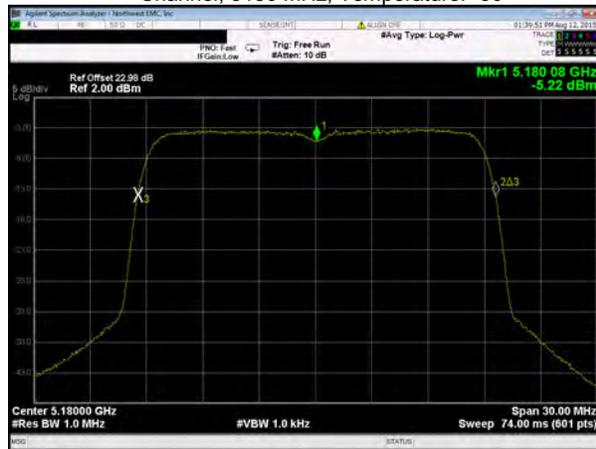
Measured Value (MHz)	5180.075
Assigned Value (MHz)	5180
Error (ppm)	14.5
Limit (ppm)	100
Results	Pass

Chain B, 802.11(n) HT, MCS8, 5150 MHz - 5250 MHz - Low
Channel, 5180 MHz, Temperature: -20°



Measured Value (MHz)	5180.075
Assigned Value (MHz)	5180
Error (ppm)	14.5
Limit (ppm)	100
Results	Pass

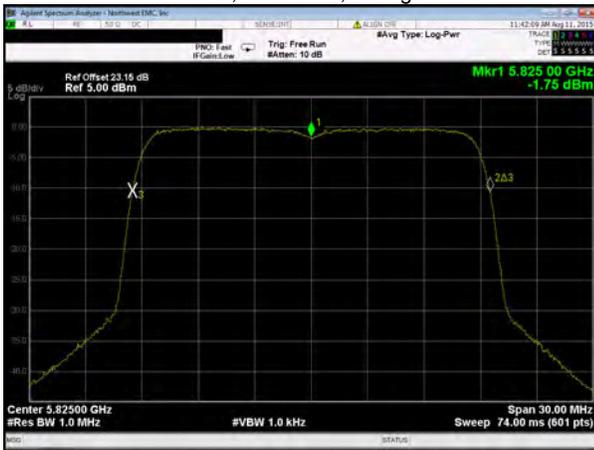
Chain B, 802.11(n) HT, MCS8, 5150 MHz - 5250 MHz - Low
Channel, 5180 MHz, Temperature: -30°



Measured Value (MHz)	5180.075
Assigned Value (MHz)	5180
Error (ppm)	14.5
Limit (ppm)	100
Results	Pass

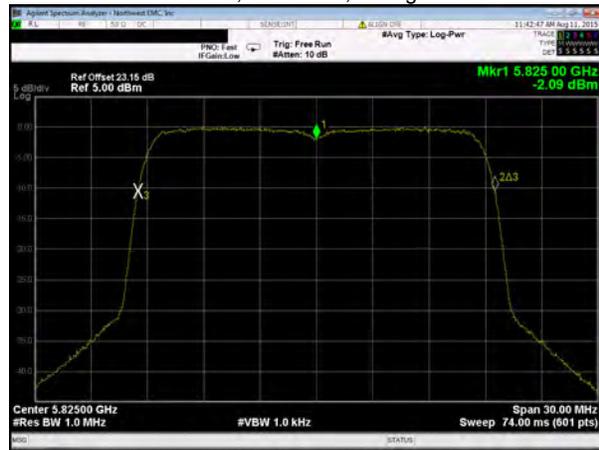
FREQUENCY STABILITY

Chain B, 802.11(n) HT, MCS8, 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Voltage: 115%



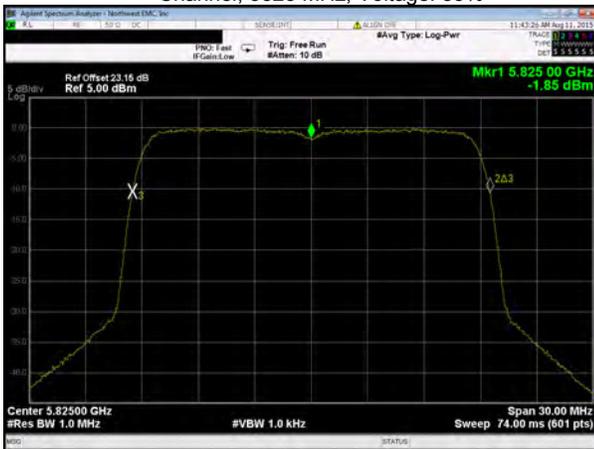
Measured Value (MHz)	5825
Assigned Value (MHz)	5825
Error (ppm)	0
Limit (ppm)	100
Results	Pass

Chain B, 802.11(n) HT, MCS8, 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Voltage: 100%



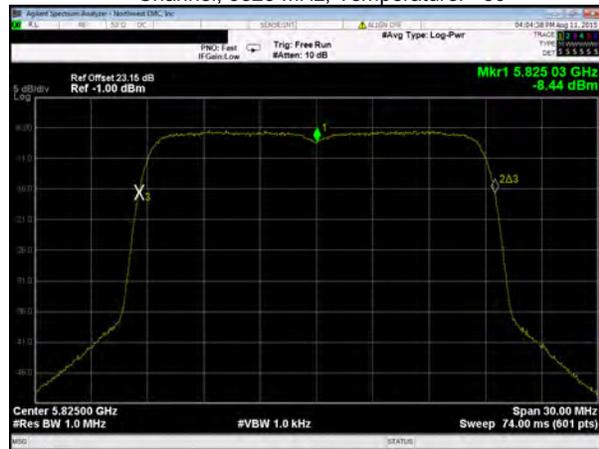
Measured Value (MHz)	5825
Assigned Value (MHz)	5825
Error (ppm)	0
Limit (ppm)	100
Results	Pass

Chain B, 802.11(n) HT, MCS8, 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Voltage: 85%



Measured Value (MHz)	5825
Assigned Value (MHz)	5825
Error (ppm)	0
Limit (ppm)	100
Results	Pass

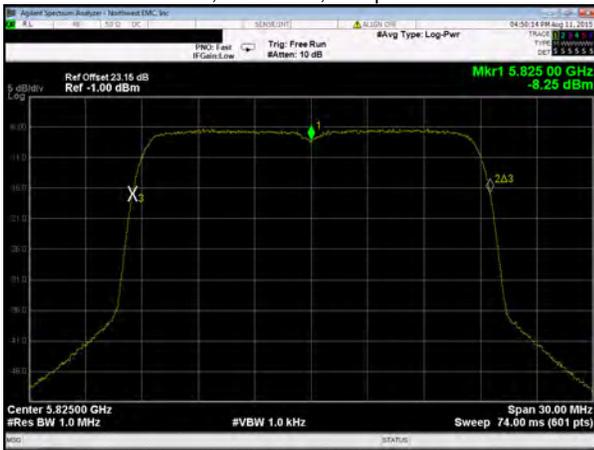
Chain B, 802.11(n) HT, MCS8, 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Temperature: +50°



Measured Value (MHz)	5825.025
Assigned Value (MHz)	5825
Error (ppm)	4.3
Limit (ppm)	100
Results	Pass

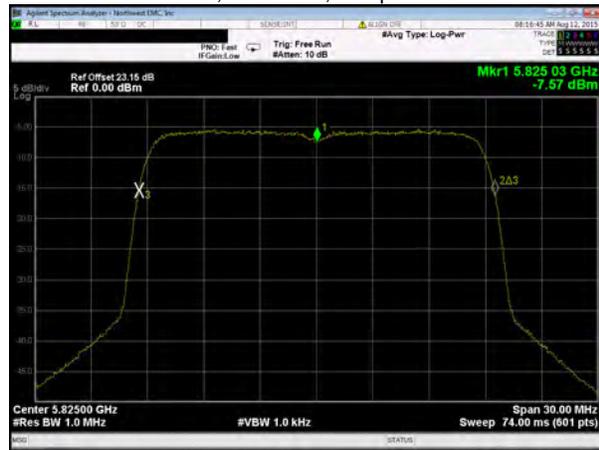
FREQUENCY STABILITY

Chain B, 802.11(n) HT, MCS8, 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Temperature: +40°



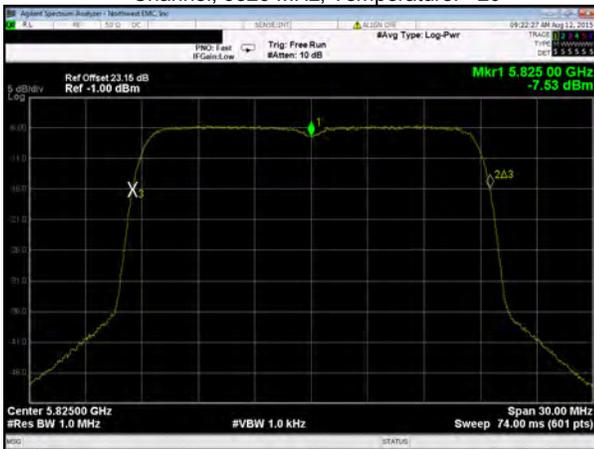
Measured Value (MHz)	5825
Assigned Value (MHz)	5825
Error (ppm)	0
Limit (ppm)	100
Results	Pass

Chain B, 802.11(n) HT, MCS8, 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Temperature: +30°



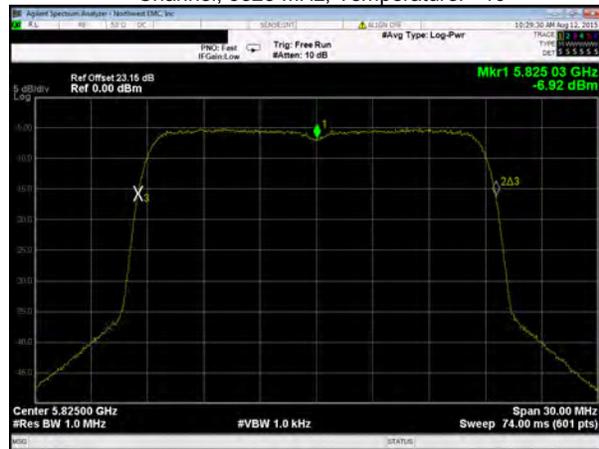
Measured Value (MHz)	5825.025
Assigned Value (MHz)	5825
Error (ppm)	4.3
Limit (ppm)	100
Results	Pass

Chain B, 802.11(n) HT, MCS8, 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Temperature: +20°



Measured Value (MHz)	5825
Assigned Value (MHz)	5825
Error (ppm)	0
Limit (ppm)	100
Results	Pass

Chain B, 802.11(n) HT, MCS8, 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Temperature: +10°



Measured Value (MHz)	5825.025
Assigned Value (MHz)	5825
Error (ppm)	4.3
Limit (ppm)	100
Results	Pass

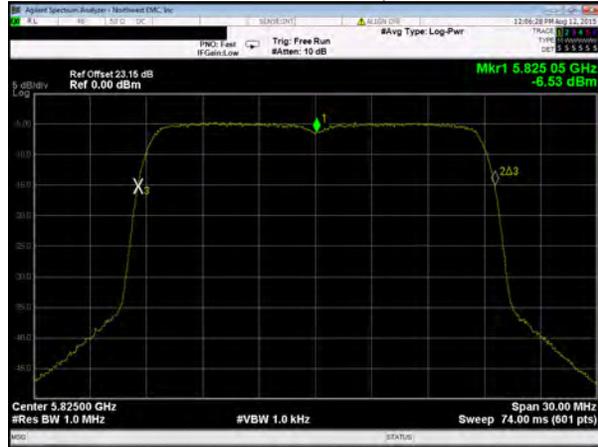
FREQUENCY STABILITY

Chain B, 802.11(n) HT, MCS8, 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Temperature: 0°



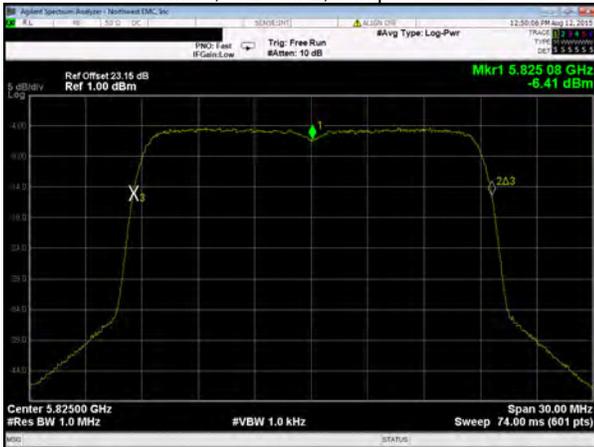
Measured Value (MHz)	5825.025
Assigned Value (MHz)	5825
Error (ppm)	4.3
Limit (ppm)	100
Results	Pass

Chain B, 802.11(n) HT, MCS8, 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Temperature: -10°



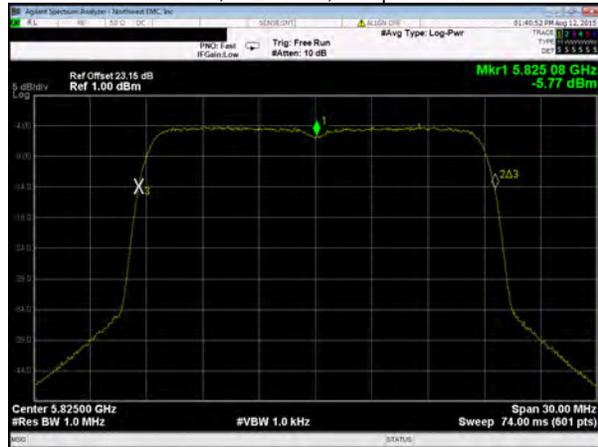
Measured Value (MHz)	5825.05
Assigned Value (MHz)	5825
Error (ppm)	8.6
Limit (ppm)	100
Results	Pass

Chain B, 802.11(n) HT, MCS8, 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Temperature: -20°



Measured Value (MHz)	5825.075
Assigned Value (MHz)	5825
Error (ppm)	12.9
Limit (ppm)	100
Results	Pass

Chain B, 802.11(n) HT, MCS8, 5725 MHz - 5850 MHz - High Channel, 5825 MHz, Temperature: -30°



Measured Value (MHz)	5825.075
Assigned Value (MHz)	5825
Error (ppm)	12.9
Limit (ppm)	100
Results	Pass

FREQUENCY STABILITY

