American Portwell Technology Inc.

Dual Band Wireless-AC 3160 Module

FCC 15.207:2017

FCC 15.407:2017

802.11an, ac SISO Radio

Report # APPR0043.1 Rev. 1

NVLAP Lab Code: 201049-0

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CERTIFICATE OF TEST

Last Date of Test: August 28, 2017
American Portwell Technology Inc.
Model: Dual Band Wireless-AC 3160 Module

Radio Equipment Testing

Standards

Specification	Method
FCC 15.207:2017	ANSI C63.10:2013
FCC 15.407:2017	

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	No	N/A	Not required for C2PC based on product description
12.2	Duty Cycle	Yes	Pass	
12.3.2.4	Maximum Conducted Output Power	Yes	Pass	
12.3.2.4	Equivalent Isotropic Radiated Power (EIRP)	Yes	Pass	
12.4.1	Emission Bandwidth	No	N/A	Not required for C2PC based on product description
12.4.2	Occupied Bandwidth	No	N/A	Not required for C2PC based on product description
12.4.2	Band Edge	No	N/A	Not required for C2PC based on product description
12.5	Maximum Power Spectral Density	No	N/A	Not required for C2PC based on product description
KDB 789033 -H	Measurement of Emission at Elevation Angle Higher Than 30 Degrees From Horizon	No	N/A	Not required unless the EUT is a Master device used outdoors.

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		
01	Added new data sheets.	8/31/2017	
	Powerline Conducted Emissions	8/31/2017	19-24
	Spurious Radiated Emissions	8/31/2017	47-66
	Duty Cycle	8/31/2017	85-104
	Maximum Conducted Output Power	8/31/2017	115-125
	Equivalent Isotropic Radiated Power	8/31/2017	136-146
	Updated last date of test.	8/31/2017	2, 8
	Added new configurations APPR0050-1	8/31/2017	11
	Updated dates in Modifications	8/31/2017	12

ACCREDITATIONS AND AUTHORIZATIONS

2017.6.12

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 Element to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

ISED - Recognized by Innovation, Science and Economic Development Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with ISED.

European Union

European Commission – Within Element, we have a EU Notified Body validated for the EMCD and RED Directives.

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

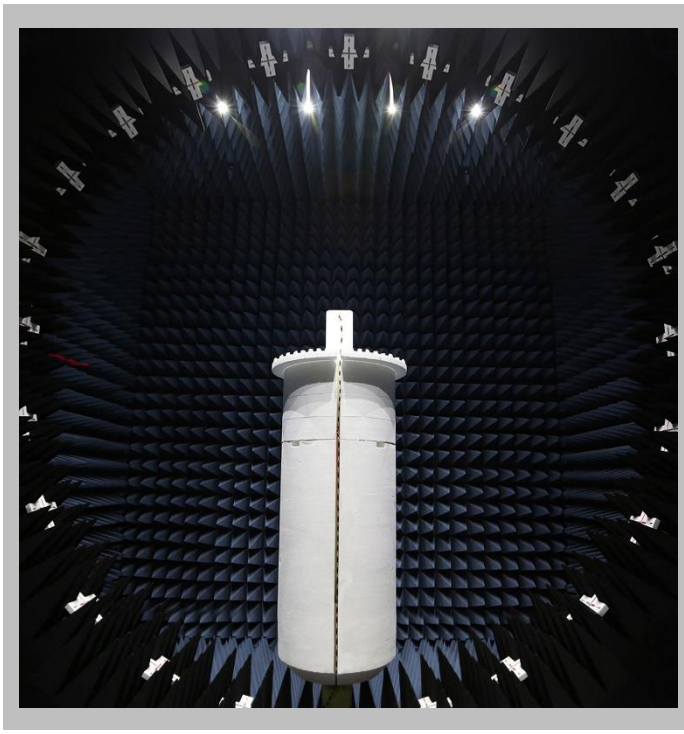
MIC – Recognized by MIC as a CAB for the acceptance of test data.

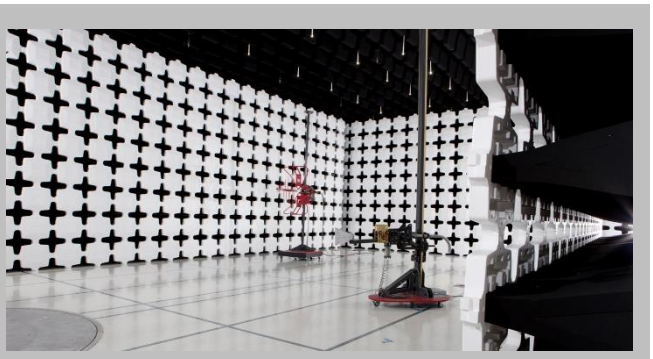
SCOPE

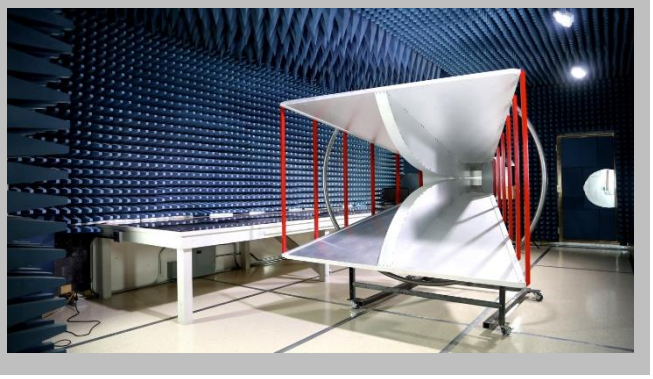
For details on the Scopes of our Accreditations, please visit:
http://portlandcustomer.element.com/ts/scope/scope.htm
http://gsi.nist.gov/global/docs/cabs/designations.html

FACILITIES

California	Minnesota	New York	Oregon	Texas	Washington
Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs MN01-08, MN10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 554-8214	Labs EV01-12 22975 NW Evergreen Pkwy Hillsboro, OR 97124 (503) 844-4066	Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Labs NC01-05 19201 120th Ave NE Bothell, WA 98011 (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
Innovation, Science and Economic Development 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/RRA, MIC, MOC, NCC, OFCA					
US0158	US0175	N/A	US0017	US0191	US0157







MEASUREMENT UNCERTAINTY

TMU.2015.07.10

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.

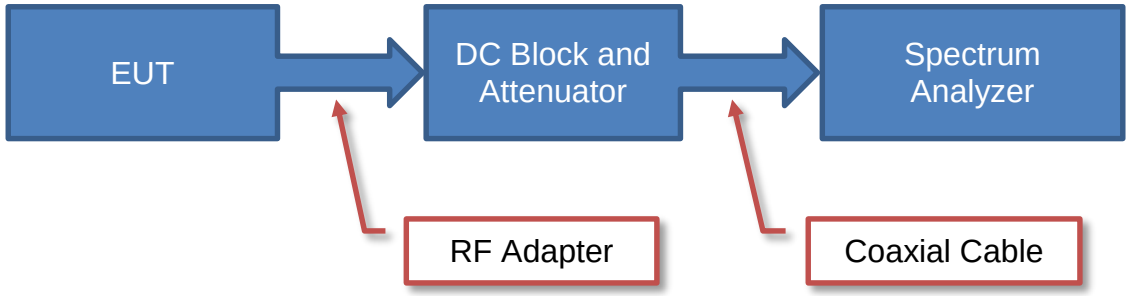
A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found included as part of the applicable test description page. 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.

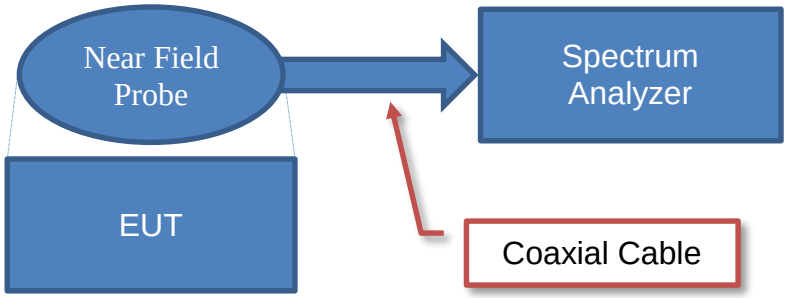
Test	+ MU	- MU
Frequency Accuracy (Hz)	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	0.3 dB	-0.3 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%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

Test Setup Block Diagrams

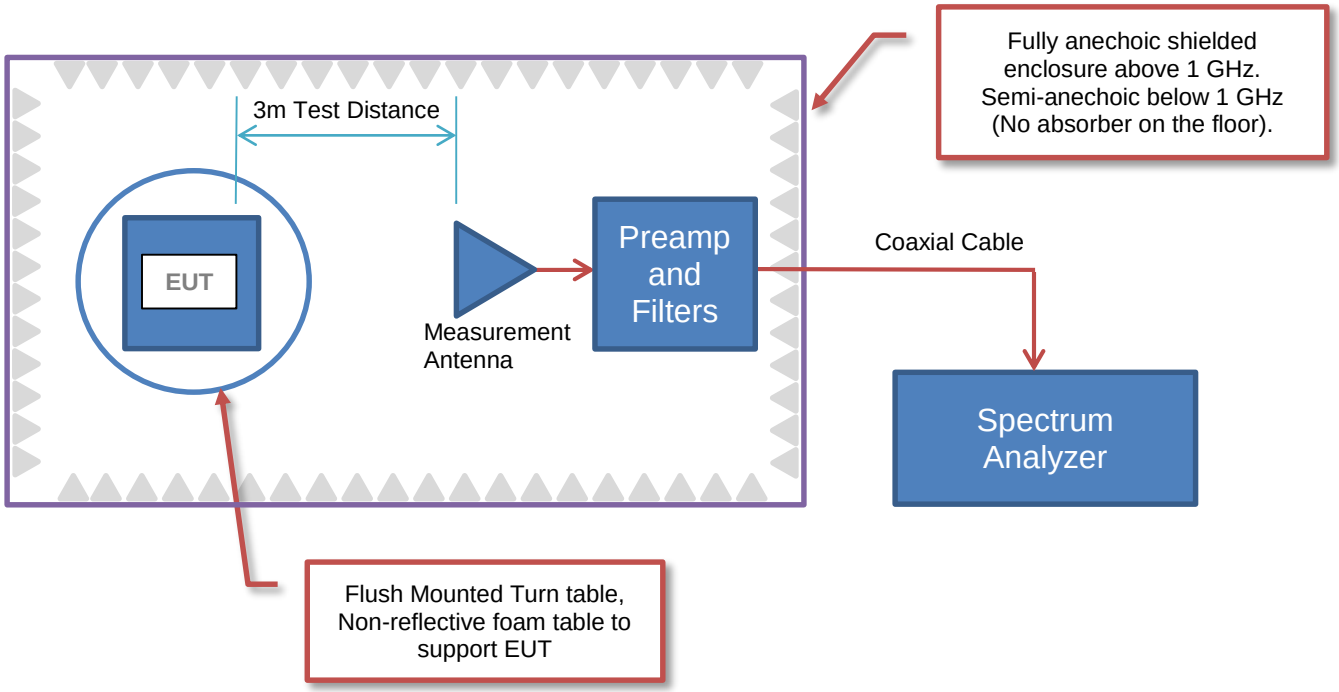
Antenna Port Conducted Measurements



Near Field Test Fixture Measurements



Spurious Radiated Emissions



PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	American Portwell Technology Inc.
Address:	44200 Christy Street
City, State, Zip:	Fremont, CA 94538
Test Requested By:	Brian Zhang
Model:	Dual Band Wireless-AC 3160 Module
First Date of Test:	May 11, 2017
Last Date of Test:	August 28, 2017
Receipt Date of Samples:	April 24, 2017
Equipment Design Stage:	Prototype
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
The equipment under test (EUT) consists of an Intel Atom Nano 6060 motherboard combined with an Intel dual band wireless module, 2.5" SATA 128 GB SSD, 8Gb DDR3L memory and GPIO connection for enabling and disabling the WiFi. The dual band wireless radio is a pre-certified unit (FCC ID: 2AMLS-MWISP, IC: 22866-MWISP, EU-Type Examination Cert Registration#: 60118682 001). This report is to support the change of the antennas to a dipole version (dipole + extension cable with an assembly gain of 2.6dBi for 2.4GHz and 3.41dBi for 5GHz). The radio module was tested outside of its normal aluminum chassis in a standalone configuration, where applicable. This product is being developed for use in a GE Healthcare system. As such, the EUT will be mounted in their system for some of the tests. The GE system is the workstation for a mobile X-Ray system. The workstation functions to control an X-Ray generator, Flat Panel Photon detector and other electronics. The X-Ray images are passed through an interconnect cable to the mobile workstations which receives and processes the images. The EUT is used to wirelessly send images to a Patient Archival System (PACS) using a standard DICOM format.

Testing Objective:
To demonstrate compliance of the 802.11 radio under FCC 15.407 for operation in the 5.2, 5.3, 5.6 and 5.8 GHz bands.

CONFIGURATIONS

Configuration APPR0043- 1

Software/Firmware Running during test	
Description	**Version**
Intel DRTU Tool	1.7.7-02972

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Intel WiFi Radio Module	Intel Corporation	3160HMW	None

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
LCD Monitor	NEC	E224Wi-BK	41103503NA
USB Mouse	Microsoft	1113	91705-523-2412291-21449
WiSP Module	American Portwell Technology Inc.	MWISP6060	None
USB Keyboard	Lenovo	KB1021	0002643
AC/DC Adapter	FSP Group Inc.	FSP060-DIBAN2	H6481000940
Wireless Switch	Unknown	Unknown	None

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Power (Monitor)	No	1.8m	No	AC Mains	LCD Monitor
DisplayPort	Yes	3m	No	LCD Monitor	WiSP Module
USB (Mouse)	Yes	2.5m	No	USB Mouse	WiSP Module
USB (Keyboard)	Yes	2.5m	No	USB Keyboard	WiSP Module
AC Power (Adapter)	No	1.8m	Yes	AC Mains	AC/DC Adapter
DC Power (Adapter)	No	1.5m	No	AC/DC Adapter	WiSP Module
Wireless Switch Control	No	2.2m	No	Wireless Switch	WiSP Module
u.FL to RP-SMA	Yes	0.3m	No	Intel WiFi Radio Module	50 ohm termination
u.FL to RP-SMA	Yes	0.3m	No	Intel WiFi Radio Module	signal analyzer

CONFIGURATIONS

Configuration APPR0043- 2

Software/Firmware Running during test	
Description	**Version**
Intel DRTU Tool	1.7.7-02972

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Intel WiFi Radio Module	Intel Corporation	3160HMW	None

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
WiSP Module	American Portwell Technology Inc.	MWISP6060	None
AC/DC Adapter	FSP Group Inc.	FSP060-DIBAN2	H6481000940
Wireless Switch	Unknown	Unknown	None
Dipole Antenna x2	M.gear	C1685-510008-A	None

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
LCD Monitor	NEC	E224Wi-BK	41103503NA
USB Mouse	Microsoft	1113	91705-523-2412291-21449
USB Keyboard	Lenovo	KB1021	0002643

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Power (Monitor)	No	1.8m	No	AC Mains	LCD Monitor
DisplayPort	Yes	3m	No	LCD Monitor	WiSP Module
USB (Mouse)	Yes	2.5m	No	USB Mouse	WiSP Module
USB (Keyboard)	Yes	2.5m	No	USB Keyboard	WiSP Module
AC Power (Adapter)	No	1.8m	Yes	AC Mains	AC/DC Adapter
DC Power (Adapter)	No	1.5m	No	AC/DC Adapter	WiSP Module
Wireless Switch Control	No	2.2m	No	Wireless Switch	WiSP Module
u.FL to RP-SMA x2	Yes	0.3m	No	Intel WiFi Radio Module	RP-SMA to SMA cable
RP-SMA to SMA x2	Yes	0.55m	No	u.FL to RP-SMA cable	Dipole Antenna

CONFIGURATIONS

Configuration APPR0050- 1

Software/Firmware Running during test	
Description	**Version**
Intel DRTU Tool	1.7.7-02972

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Intel WiFi radio module	Intel Corporation	3160HMW	None

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
LCD Monitor	NEC	E224Wi-BK	41103503NA
USB Mouse	Microsoft	1113	91705-523-2412291-21449
WiSP Module	GE Healthcare	Unknown	None
USB Keyboard	Lenovo	KB1021	0002643
AC/DC Adapter	FSP Group, Inc.	FSP060-DIBAN2	H6481000940
Wireless Switch	Unknown	Unknown	None

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Power (Monitor)	No	1.8m	No	AC Mains	LCD Monitor
DisplayPort	Yes	3m	No	LCD Monitor	WiSP Module
USB (Mouse)	Yes	2.5m	No	USB Mouse	WiSP Module
USB (Keyboard)	Yes	2.5m	No	USB Keyboard	WiSP Module
AC Power (Adapter)	No	1.8m	Yes	AC Mains	AC/DC Adapter
DC Power (Adapter)	No	1.5m	No	AC/DC Adapter	WiSP Module
Wireless Switch Control	No	2.2m	No	Wireless Switch	WiSP Module
u.FL to RP-SMA	Yes	0.3m	No	Intel WiFi radio module	50 ohm termination
u.FL to RP-SMA	Yes	0.3m	No	Intel WiFi radio module	signal analyzer

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	5/11/2017	Duty Cycle	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
2	8/18/2017	Maximum Conducted Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
3	8/18/2017	Equivalent Isotropic Radiated Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
4	8/25/2017	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
5	8/28/2017	Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

POWER TABLE

US – UNII (5GHz) Transmit Power Table

5.2GHz Sub-band

Mode	BW (MHz)	Channel Frequency (MHz)	RF Output Power at Main RF (dBm)
802.11a	20	5180	14.5
		5200	15.5
		5240	15
802.11n	20	5180	14.5
		5200	15.5
		5240	15
802.11n	40	5190	10.5
		5230	16.5
802.11ac	80	5210	9

5.3GHz Sub-band

Mode	BW (MHz)	Channel Frequency (MHz)	RF Output Power at Main RF (dBm)
802.11a	20	5260	16.5
		5320	14.5
802.11n	20	5260	16.5
		5320	14.5
802.11n	40	5270	10.5
		5310	12
802.11ac	80	5290	11.5

5.6GHz Sub-band

Mode	BW (MHz)	Channel Frequency (MHz)	RF Output Power at Main RF (dBm)
802.11a	20	5500	14.5
		5580	16.5
		5700	14
802.11n	20	5500	14.5
		5580	16.5
		5700	14
802.11n	40	5510	11.5
		5590	16.5
		5670	16.5

POWER TABLE

802.11ac	80	5530	10
		5610	15

5.8GHz Sub-band

Mode	BW (MHz)	Channel Frequency (MHz)	RF Output Power at Main RF (dBm)
802.11a	20	5745	16.5
		5785	16.5
		5825	16.5
802.11n	20	5745	16.5
		5785	16.5
		5825	16.5
802.11n	40	5755	16.5
		5795	16.5
802.11ac	80	5775	15

POWERLINE CONDUCTED EMISSIONS

WTD.2017.03.21

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network. Per the standard, an insulating material was also added to ground plane between the EUT's power and remote I/O cables. Equipment is tested with power cords that are normally used or that have electrical or shielding characteristics that are the same as those cords normally used. Typically those measurements are made using a LISN (Line Impedance Stabilization Network), the 50ohm measuring port is terminated by a 50ohm EMI meter or a 50ohm resistive load. All 50ohm measuring ports of the LISN are terminated by 50ohm. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Receiver	Rohde & Schwarz	ESCI	ARF	6/22/2016	6/22/2017
Cable - Conducted Cable Assembly	Element	TXA, HHZ, TQR	TXAA	4/17/2017	4/17/2018
LISN	Solar Electronics	9252-50-R-24-BNC	LJK	9/21/2016	9/21/2017

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	2.4 dB	-2.4 dB

CONFIGURATIONS INVESTIGATED

APPR0043-2

MODES INVESTIGATED

Transmitting at Mid Ch 157 (5785MHz)

POWERLINE CONDUCTED EMISSIONS

WTD.2017.03.21

EUT:	Dual Band Wireless-AC 3160 Module	Work Order:	APPR0043
Serial Number:	None	Date:	05/22/2017
Customer:	American Portwell Technology Inc.	Temperature:	22.8°C
Attendees:	None	Relative Humidity:	46.4%
Customer Project:	None	Bar. Pressure:	1021 mb
Tested By:	Jonathan Kiefer	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	APPR0043-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2017	ANSI C63.10:2013

TEST PARAMETERS

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

COMMENTS

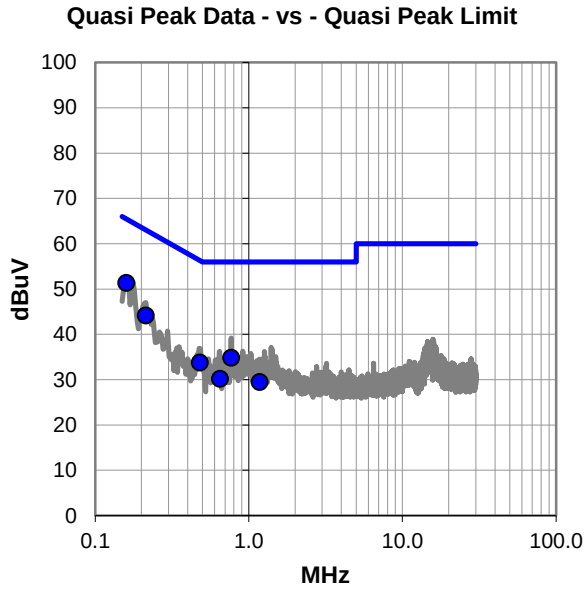
6 Mbps data rate. See power table for output power settings used.

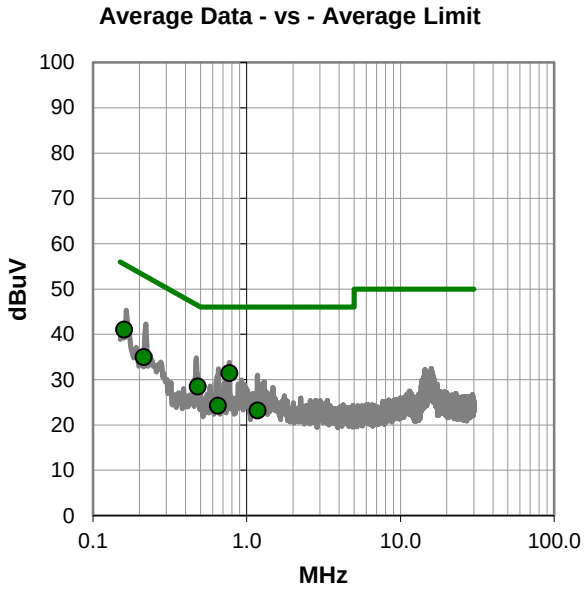
EUT OPERATING MODES

Transmitting at Mid Ch 157 (5785MHz)

DEVIATIONS FROM TEST STANDARD

None





POWERLINE CONDUCTED EMISSIONS

WTD.2017.03.21

RESULTS - Run #38

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.159	31.6	19.8	51.4	65.5	-14.1
0.214	24.4	19.8	44.2	63.1	-18.9
0.770	14.9	20.0	34.9	56.0	-21.1
0.479	13.9	19.9	33.8	56.3	-22.5
0.650	10.2	20.0	30.2	56.0	-25.8
1.176	9.7	19.8	29.5	56.0	-26.5

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.159	21.3	19.8	41.1	55.5	-14.4
0.770	11.5	20.0	31.5	46.0	-14.5
0.479	8.6	19.9	28.5	46.3	-17.8
0.214	15.2	19.8	35.0	53.1	-18.1
0.650	4.3	20.0	24.3	46.0	-21.7
1.176	3.4	19.8	23.2	46.0	-22.8

CONCLUSION

Pass

Jonathan Kiefer

Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	Dual Band Wireless-AC 3160 Module	Work Order:	APPR0043
Serial Number:	None	Date:	05/22/2017
Customer:	American Portwell Technology Inc.	Temperature:	22.8°C
Attendees:	None	Relative Humidity:	46.4%
Customer Project:	None	Bar. Pressure:	1021 mb
Tested By:	Jonathan Kiefer	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	APPR0043-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2017	ANSI C63.10:2013

TEST PARAMETERS

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

COMMENTS

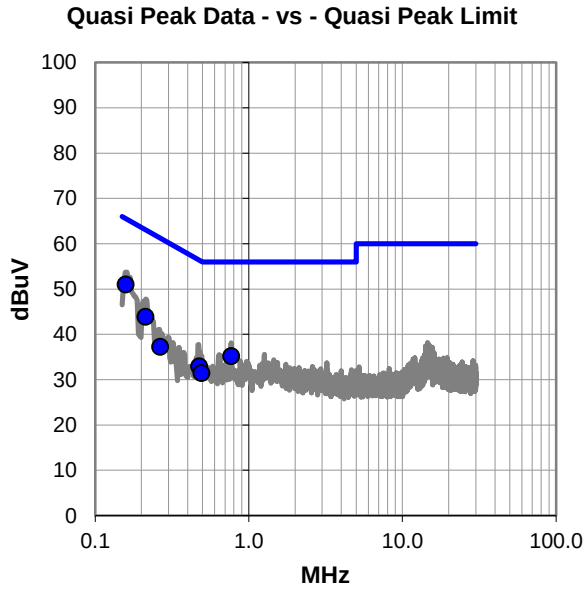
6 Mbps data rate. See power table for output power settings used.

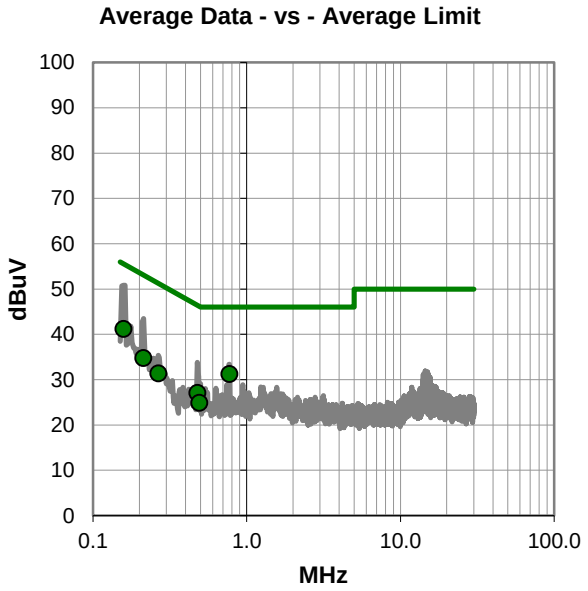
EUT OPERATING MODES

Transmitting at Mid Ch 157 (5785MHz)

DEVIATIONS FROM TEST STANDARD

None





POWERLINE CONDUCTED EMISSIONS

WTD.2017.03.21

RESULTS - Run #39

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.158	31.2	19.8	51.0	65.6	-14.6
0.213	24.0	19.9	43.9	63.1	-19.2
0.770	15.2	20.0	35.2	56.0	-20.8
0.476	13.1	19.9	33.0	56.4	-23.4
0.265	17.6	19.7	37.3	61.3	-24.0
0.492	11.6	19.9	31.5	56.1	-24.6

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.158	21.4	19.8	41.2	55.6	-14.4
0.770	11.3	20.0	31.3	46.0	-14.7
0.213	14.9	19.9	34.8	53.1	-18.3
0.476	7.2	19.9	27.1	46.4	-19.3
0.265	11.7	19.7	31.4	51.3	-19.9
0.492	5.0	19.9	24.9	46.1	-21.2

CONCLUSION

Pass

Jonathan Kiefer

Tested By

POWERLINE CONDUCTED EMISSIONS

WTD.2017.06.02.1

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network. Per the standard, an insulating material was also added to ground plane between the EUT's power and remote I/O cables. Equipment is tested with power cords that are normally used or that have electrical or shielding characteristics that are the same as those cords normally used. Typically those measurements are made using a LISN (Line Impedance Stabilization Network), the 50ohm measuring port is terminated by a 50ohm EMI meter or a 50ohm resistive load. All 50ohm measuring ports of the LISN are terminated by 50ohm. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Cable - Conducted Cable Assembly	Element	TXA, HHZ, TQR	TXAA	4/17/2017	4/17/2018
Receiver	Rohde & Schwarz	ESCI	ARF	7/17/2017	7/17/2018
LISN	Solar Electronics	9252-50-R-24-BNC	LJK	9/21/2016	9/21/2017

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	2.4 dB	-2.4 dB

CONFIGURATIONS INVESTIGATED

APPR0050-1

MODES INVESTIGATED

Transmitting Continuously on Mid Ch 116 (5580MHz)

POWERLINE CONDUCTED EMISSIONS

EUT:	Dual Band Wireless-AC 3160 Module	Work Order:	APPR0050
Serial Number:	None	Date:	08/28/2017
Customer:	American Portwell Technology Inc.	Temperature:	23.9°C
Attendees:	None	Relative Humidity:	53%
Customer Project:	None	Bar. Pressure:	1017 mb
Tested By:	Jonathan Kiefer	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	APPR0050-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2017	ANSI C63.10:2013

TEST PARAMETERS

Run #:	4	Line:	High Line	Add. Ext. Attenuation (dB):	0

COMMENTS

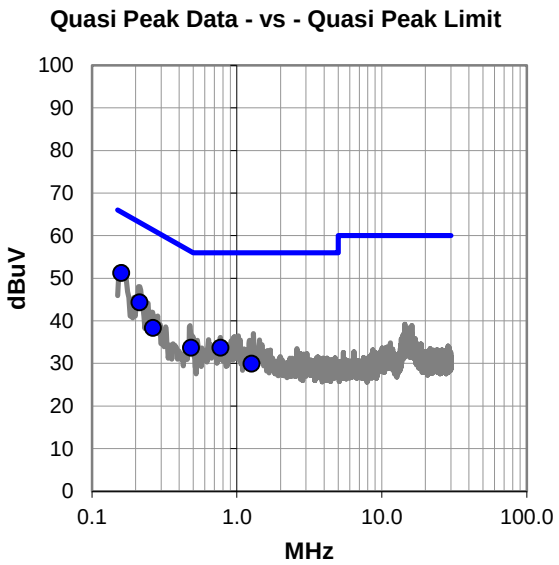
6Mbps data rate. See power table for output power settings used.

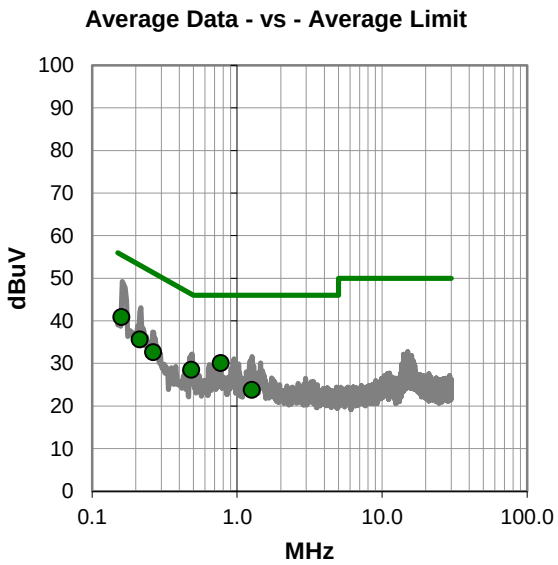
EUT OPERATING MODES

Transmitting Continuously on Mid Ch 116 (5580MHz)

DEVIATIONS FROM TEST STANDARD

None





POWERLINE CONDUCTED EMISSIONS

WTD.2017.06.02.1

RESULTS - Run #4

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.159	31.4	19.8	51.2	65.5	-14.3
0.213	24.4	19.9	44.3	63.1	-18.8
0.770	13.7	20.0	33.7	56.0	-22.3
0.483	13.8	19.9	33.7	56.3	-22.6
0.263	18.5	19.8	38.3	61.3	-23.0
1.265	10.1	19.8	29.9	56.0	-26.1

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.159	21.1	19.8	40.9	55.5	-14.6
0.770	10.1	20.0	30.1	46.0	-15.9
0.213	15.7	19.9	35.6	53.1	-17.5
0.483	8.6	19.9	28.5	46.3	-17.8
0.263	12.8	19.8	32.6	51.3	-18.7
1.265	4.0	19.8	23.8	46.0	-22.2

CONCLUSION

Pass

Jonathan Kiefer

Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	Dual Band Wireless-AC 3160 Module	Work Order:	APPR0050
Serial Number:	None	Date:	08/28/2017
Customer:	American Portwell Technology Inc.	Temperature:	23.9°C
Attendees:	None	Relative Humidity:	53%
Customer Project:	None	Bar. Pressure:	1017 mb
Tested By:	Jonathan Kiefer	Job Site:	TX01
Power:	110VAC/60Hz	Configuration:	APPR0050-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2017	ANSI C63.10:2013

TEST PARAMETERS

Run #:	5	Line:	Neutral	Add. Ext. Attenuation (dB):	0

COMMENTS

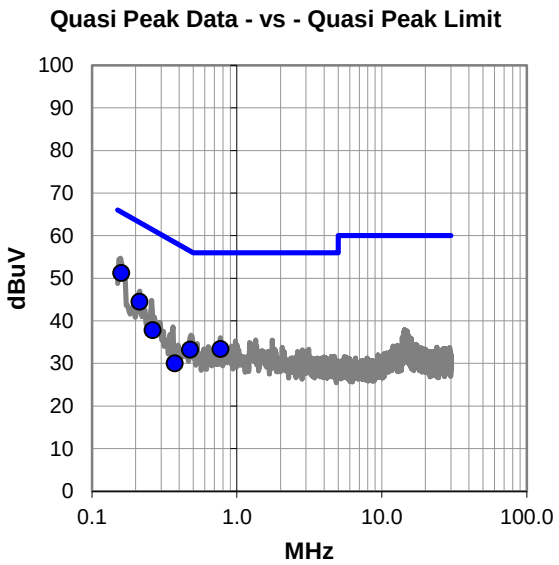
6Mbps data rate. See power table for output power settings used.

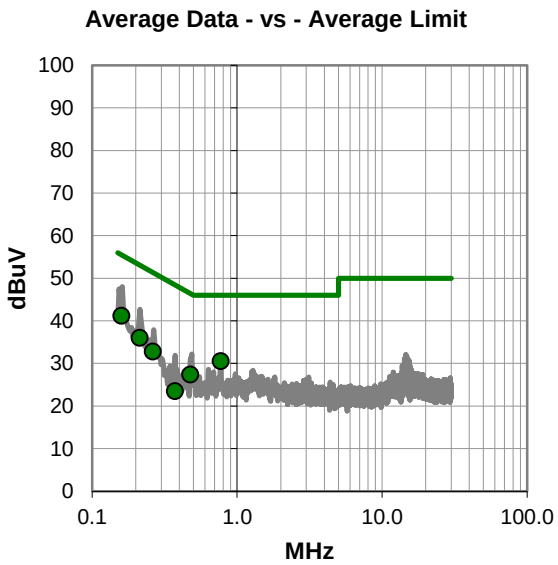
EUT OPERATING MODES

Transmitting Continuously on Mid Ch 116 (5580MHz)

DEVIATIONS FROM TEST STANDARD

None





POWERLINE CONDUCTED EMISSIONS

WTD.2017.06.02.1

RESULTS - Run #5

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.160	31.4	19.8	51.2	65.5	-14.3
0.212	24.6	19.9	44.5	63.1	-18.6
0.771	13.4	20.0	33.4	56.0	-22.6
0.477	13.3	19.9	33.2	56.4	-23.2
0.262	18.0	19.8	37.8	61.4	-23.6
0.373	10.1	19.9	30.0	58.4	-28.4

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.160	21.4	19.8	41.2	55.5	-14.3
0.771	10.5	20.0	30.5	46.0	-15.5
0.212	16.1	19.9	36.0	53.1	-17.1
0.262	13.0	19.8	32.8	51.4	-18.6
0.477	7.5	19.9	27.4	46.4	-19.0
0.373	3.6	19.9	23.5	48.4	-24.9

CONCLUSION

Pass

Jonathan Kiefer

Tested By

SPURIOUS RADIATED EMISSIONS

PSA-ESCI 2017.01.26

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

Transmitting Continuously at High Ch 157/161 (5795MHz)
Transmitting Continuously at Low Ch 149/153 (5755MHz)
Transmitting Continuously at High Ch 165 (5825MHz)
Transmitting Continuously at Low Ch 149 (5745MHz)
Transmitting Continuously at Low Ch 36/40 (5190MHz)
Transmitting Continuously at Low Ch 36 (5180MHz)
Transmitting Continuously at Low Ch 36 (5180MHz), High Ch (5240MHz)
Transmitting Continuously at Mid Ch 149-161 (5775MHz)
Transmitting Continuously at Mid Ch 36-48 (5210MHz)
Transmitting Continuously at Low Ch 149/153 (5755MHz), High Ch 157/161 (5795MHz)
Transmitting Continuously at Low Ch 36/40 (5190MHz), High Ch 44/48 (5230MHz)
Transmitting Continuously at Low Ch 149 (5745MHz), Mid Ch 157 (5785MHz), High Ch 165 (5825MHz)
Transmitting Continuously at Low Ch 36 (5180MHz), High Ch 48 (5240MHz)

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

APPR0043 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	40000 MHz

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
Filter - Band Pass/Notch	Micro-Tronics	BRC50705	HFQ	3/1/2017	12 mo
Filter - Band Pass/Notch	Micro-Tronics	BRC50703	HGH	6/8/2017	12 mo
Filter - Low Pass	Micro-Tronics	LPM50004	HHV	8/5/2016	12 mo
Amplifier - Pre-Amplifier	Miteq	JSDWK42-18004000-60-5P	PAM	11/18/2016	12 mo
Antenna - Double Ridge	A.H. Systems, Inc.	SAS-574	AXW	8/5/2016	24 mo
Cable	Element	18-40GHz	TXE	11/18/2016	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	PAL	10/12/2016	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AJG	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	PAK	10/18/2016	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AJF	NCR	0 mo
Cable	Element	8-18GHz	TXD	5/31/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAJ	5/31/2017	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AJN	9/15/2016	24 mo
Cable	Element	1-8.2 GHz	TXC	5/31/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1551	PAH	11/9/2016	12 mo
Antenna - Biconilog	ETS Lindgren	3143B	AYF	4/13/2016	24 mo
Cable	Element	RE 9kHz - 1GHz	TXB	11/9/2016	12 mo
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	10/4/2016	12 mo

TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT was tested. The EUT was configured for the required transmit frequencies in each operational band and the modes as showed in the data sheets.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These “pre-scans” are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual 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 if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector
PK = Peak Detector
AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

Measurements at the edges of the allowable band may be presented in an alternative method as provided for in the ANSI C63.10 Marker-Delta method. This method involves performing an in-band fundamental measurement followed by a screen capture of the fundamental and out-of-band emission using reduced measurement instrumentation bandwidths. The amplitude delta measured on this screen capture is applied to the fundamental emission value to show the out-of-band emission level as applied to the limit.

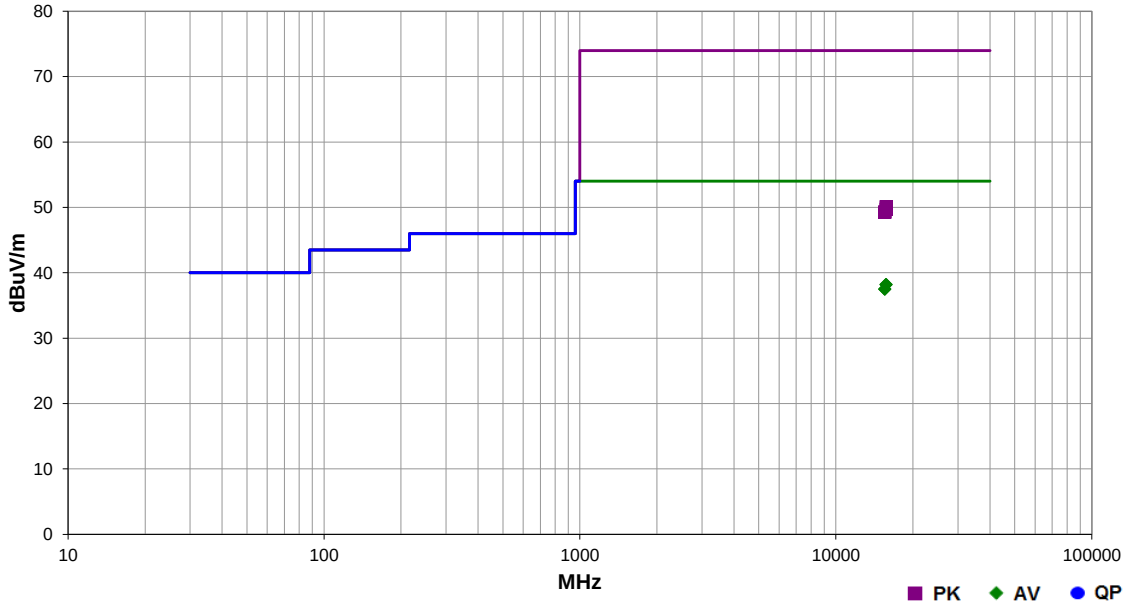
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	APPR0043	**Date:**	05/24/17	Jonathan Kiefer	
Project:	None	**Temperature:**	22.5 °C		
Job Site:	TX02	**Humidity:**	43.5% RH		
Serial Number:	None	**Barometric Pres.:**	1014 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	2				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Low Ch 36 (5180MHz), High Ch 48 (5240MHz)				
Deviations:	None				
Comments:	PK and AVG(RMS) data. Harmonics for 20 MHz channel bandwidths, 5.2GHz Band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	87	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



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
15720.430	26.5	11.7	1.2	54.0	3.0	0.0	Horz	AV	0.0	38.2	54.0	-15.8	High Ch 48, EUT Horizontal, 6 Mbps
15720.630	26.5	11.7	1.2	182.0	3.0	0.0	Vert	AV	0.0	38.2	54.0	-15.8	High Ch 48, EUT Horizontal, 6 Mbps
15538.280	26.2	11.3	1.2	224.0	3.0	0.0	Horz	AV	0.0	37.5	54.0	-16.5	Low Ch 36, EUT Horizontal, 6 Mbps
15537.990	26.2	11.3	1.2	87.0	3.0	0.0	Vert	AV	0.0	37.5	54.0	-16.5	Low Ch 36, EUT Horizontal, 6 Mbps
15721.310	38.4	11.7	1.2	182.0	3.0	0.0	Vert	PK	0.0	50.1	74.0	-23.9	High Ch 48, EUT Horizontal, 6 Mbps
15718.740	38.0	11.7	1.2	54.0	3.0	0.0	Horz	PK	0.0	49.7	74.0	-24.3	High Ch 48, EUT Horizontal, 6 Mbps
15542.460	38.0	11.3	1.2	224.0	3.0	0.0	Horz	PK	0.0	49.3	74.0	-24.7	Low Ch 36, EUT Horizontal, 6 Mbps
15541.930	38.0	11.3	1.2	87.0	3.0	0.0	Vert	PK	0.0	49.3	74.0	-24.7	Low Ch 36, EUT Horizontal, 6 Mbps

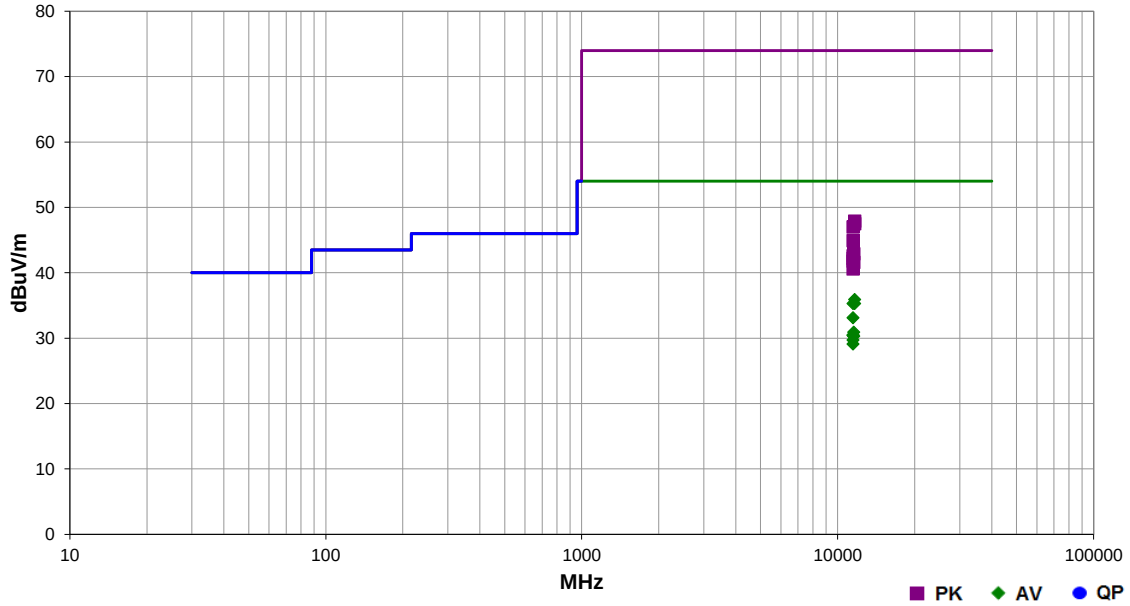
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	APPR0043	**Date:**	05/24/17	Jonathan Kiefer	
Project:	None	**Temperature:**	22.5 °C		
Job Site:	TX02	**Humidity:**	43.5% RH		
Serial Number:	None	**Barometric Pres.:**	1014 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	2				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Low Ch 149 (5745MHz), Mid Ch 157 (5785MHz), High Ch 165 (5825MHz)				
Deviations:	None				
Comments:	PK and AVG(RMS) data. Harmonics for 20 MHz channel bandwidths, 5.8GHz Band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	88	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



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
11649.980	38.6	-2.7	3.9	255.0	3.0	0.0	Vert	AV	0.0	35.9	54.0	-18.1	High Ch 165, EUT Horizontal, 6 Mbps
11490.780	38.4	-3.1	1.2	315.9	3.0	0.0	Horz	AV	0.0	35.3	54.0	-18.7	Low Ch 149, EUT Horizontal, 6 Mbps
11650.110	38.0	-2.7	1.2	309.9	3.0	0.0	Horz	AV	0.0	35.3	54.0	-18.7	High Ch 165, EUT Horizontal, 6 Mbps
11490.380	36.2	-3.1	1.2	13.0	3.0	0.0	Vert	AV	0.0	33.1	54.0	-20.9	Low Ch 149, EUT Horizontal, 6 Mbps
11570.450	33.9	-3.0	2.1	14.0	3.0	0.0	Vert	AV	0.0	30.9	54.0	-23.1	Mid Ch 157, EUT Horizontal, 6 Mbps
11490.010	33.6	-3.1	1.9	342.0	3.0	0.0	Vert	AV	0.0	30.5	54.0	-23.5	Low Ch 149, EUT Vertical, 6 Mbps
11489.840	33.5	-3.1	3.6	111.9	3.0	0.0	Vert	AV	0.0	30.4	54.0	-23.6	Low Ch 149, EUT On Side, 6 Mbps
11570.460	33.3	-3.0	1.2	87.9	3.0	0.0	Horz	AV	0.0	30.3	54.0	-23.7	Mid Ch 157, EUT Horizontal, 6 Mbps
11490.360	32.8	-3.1	1.2	267.9	3.0	0.0	Horz	AV	0.0	29.7	54.0	-24.3	Low Ch 149, EUT Vertical, 6 Mbps
11490.170	32.2	-3.1	1.2	315.9	3.0	0.0	Horz	AV	0.0	29.1	54.0	-24.9	Low Ch 149, EUT On Side, 6 Mbps
11650.620	50.6	-2.7	3.9	255.0	3.0	0.0	Vert	PK	0.0	47.9	74.0	-26.1	High Ch 165, EUT Horizontal, 6 Mbps
11651.630	50.2	-2.7	1.2	309.9	3.0	0.0	Horz	PK	0.0	47.5	74.0	-26.5	High Ch 165, EUT Horizontal, 6 Mbps
11491.120	50.1	-3.1	1.2	315.9	3.0	0.0	Horz	PK	0.0	47.0	74.0	-27.0	Low Ch 149, EUT Horizontal, 6 Mbps
11488.030	48.0	-3.1	1.2	13.0	3.0	0.0	Vert	PK	0.0	44.9	74.0	-29.1	Low Ch 149, EUT Horizontal, 6 Mbps
11570.890	45.9	-3.0	2.1	14.0	3.0	0.0	Vert	PK	0.0	42.9	74.0	-31.1	Mid Ch 157, EUT Horizontal, 6 Mbps
11492.500	45.7	-3.1	3.6	111.9	3.0	0.0	Vert	PK	0.0	42.6	74.0	-31.4	Low Ch 149, EUT On Side, 6 Mbps
11488.340	45.3	-3.1	1.9	342.0	3.0	0.0	Vert	PK	0.0	42.2	74.0	-31.8	Low Ch 149, EUT Vertical, 6 Mbps
11488.780	44.9	-3.1	1.2	267.9	3.0	0.0	Horz	PK	0.0	41.8	74.0	-32.2	Low Ch 149, EUT Vertical, 6 Mbps
11567.930	44.6	-3.0	1.2	87.9	3.0	0.0	Horz	PK	0.0	41.6	74.0	-32.4	Mid Ch 157, EUT Horizontal, 6 Mbps
11492.240	43.7	-3.1	1.2	315.9	3.0	0.0	Horz	PK	0.0	40.6	74.0	-33.4	Low Ch 149, EUT On Side, 6 Mbps

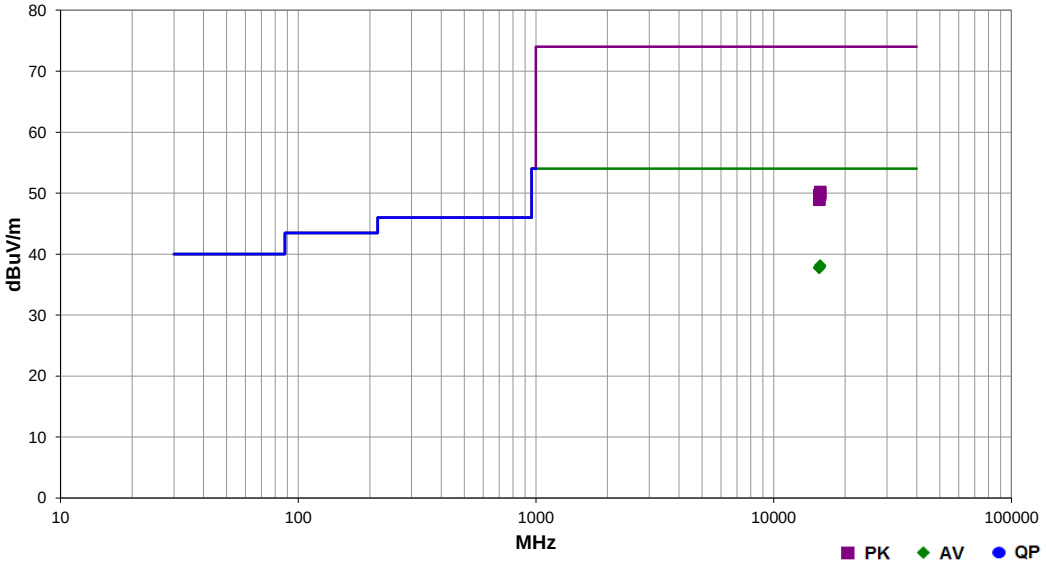
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	APPR0043	**Date:**	05/24/17	Jonathan Kiefer	
Project:	None	**Temperature:**	22.5 °C		
Job Site:	TX02	**Humidity:**	43.5% RH		
Serial Number:	None	**Barometric Pres.:**	1014 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	2				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Low Ch 36/40 (5190MHz), High Ch 44/48 (5230MHz)				
Deviations:	None				
Comments:	PK and AVG(RMS) data. Harmonics for 40 MHz channel bandwidths, 5.2GHz Band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	52	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



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
15688.330	26.5	11.6	1.2	20.0	3.0	0.0	Vert	AV	0.0	38.1	54.0	-15.9	High Ch 44/48, EUT Horizontal, MCS9 (256-QAM)
15689.140	26.5	11.6	1.2	198.0	3.0	0.0	Vert	AV	0.0	38.1	54.0	-15.9	High Ch 44/48, EUT Horizontal, MCS0
15689.130	26.4	11.6	1.2	21.0	3.0	0.0	Vert	AV	0.0	38.0	54.0	-16.0	High Ch 44/48, EUT Horizontal, MCS7
15567.620	26.4	11.4	1.2	63.9	3.0	0.0	Vert	AV	0.0	37.8	54.0	-16.2	Low Ch 36/40, EUT Horizontal, MCS0
15567.590	26.4	11.4	1.2	66.0	3.0	0.0	Vert	AV	0.0	37.8	54.0	-16.2	Low Ch 36/40, EUT Horizontal, MCS7
15567.970	26.3	11.4	1.2	80.0	3.0	0.0	Vert	AV	0.0	37.7	54.0	-16.3	Low Ch 36/40, EUT Horizontal, MCS9 (256-QAM)
15690.630	38.6	11.6	1.2	21.0	3.0	0.0	Vert	PK	0.0	50.2	74.0	-23.8	High Ch 44/48, EUT Horizontal, MCS7
15687.780	38.5	11.6	1.2	198.0	3.0	0.0	Vert	PK	0.0	50.1	74.0	-23.9	High Ch 44/48, EUT Horizontal, MCS0
15569.110	38.3	11.4	1.2	80.0	3.0	0.0	Vert	PK	0.0	49.7	74.0	-24.3	Low Ch 36/40, EUT Horizontal, MCS9 (256-QAM)
15688.320	38.1	11.6	1.2	20.0	3.0	0.0	Vert	PK	0.0	49.7	74.0	-24.3	High Ch 44/48, EUT Horizontal, MCS9 (256-QAM)
15572.130	37.7	11.4	1.2	63.9	3.0	0.0	Vert	PK	0.0	49.1	74.0	-24.9	Low Ch 36/40, EUT Horizontal, MCS0
15570.160	37.5	11.4	1.2	66.0	3.0	0.0	Vert	PK	0.0	48.9	74.0	-25.1	Low Ch 36/40, EUT Horizontal, MCS7

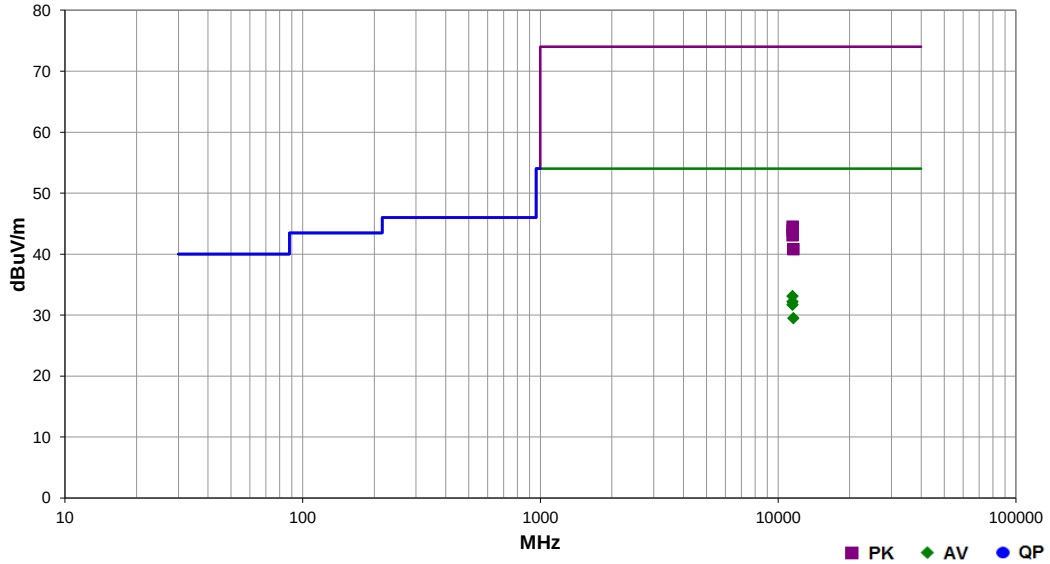
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	APPR0043	**Date:**	05/24/17		
Project:	None	**Temperature:**	22.5 °C		
Job Site:	TX02	**Humidity:**	43.5% RH		
Serial Number:	None	**Barometric Pres.:**	1014 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	2				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Low Ch 149/153 (5755MHz), High Ch 157/161 (5795MHz)				
Deviations:	None				
Comments:	PK and AVG(RMS) data. Harmonics for 40 MHz channel bandwidths, 5.8GHz Band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	52	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



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
11511.230	36.2	-3.1	1.2	313.0	3.0	0.0	Vert	AV	0.0	33.1	54.0	-20.9	Low Ch 149/153, EUT Horizontal, MCS9 (256-QAM)
11509.870	35.3	-3.1	2.5	327.9	3.0	0.0	Vert	AV	0.0	32.2	54.0	-21.8	Low Ch 149/153, EUT Horizontal, MCS0
11511.290	34.8	-3.1	1.2	333.0	3.0	0.0	Vert	AV	0.0	31.7	54.0	-22.3	Low Ch 149/153, EUT Horizontal, MCS7
11591.440	32.4	-2.9	1.2	337.0	3.0	0.0	Vert	AV	0.0	29.5	54.0	-24.5	High Ch 157/161, EUT Horizontal, MCS9 (256-QAM)
11511.560	47.6	-3.1	1.2	313.0	3.0	0.0	Vert	PK	0.0	44.5	74.0	-29.5	Low Ch 149/153, EUT Horizontal, MCS9 (256-QAM)
11510.180	47.0	-3.1	2.5	327.9	3.0	0.0	Vert	PK	0.0	43.9	74.0	-30.1	Low Ch 149/153, EUT Horizontal, MCS0
11509.790	46.2	-3.1	1.2	333.0	3.0	0.0	Vert	PK	0.0	43.1	74.0	-30.9	Low Ch 149/153, EUT Horizontal, MCS7
11588.730	43.8	-3.0	1.2	337.0	3.0	0.0	Vert	PK	0.0	40.8	74.0	-33.2	High Ch 157/161, EUT Horizontal, MCS9 (256-QAM)

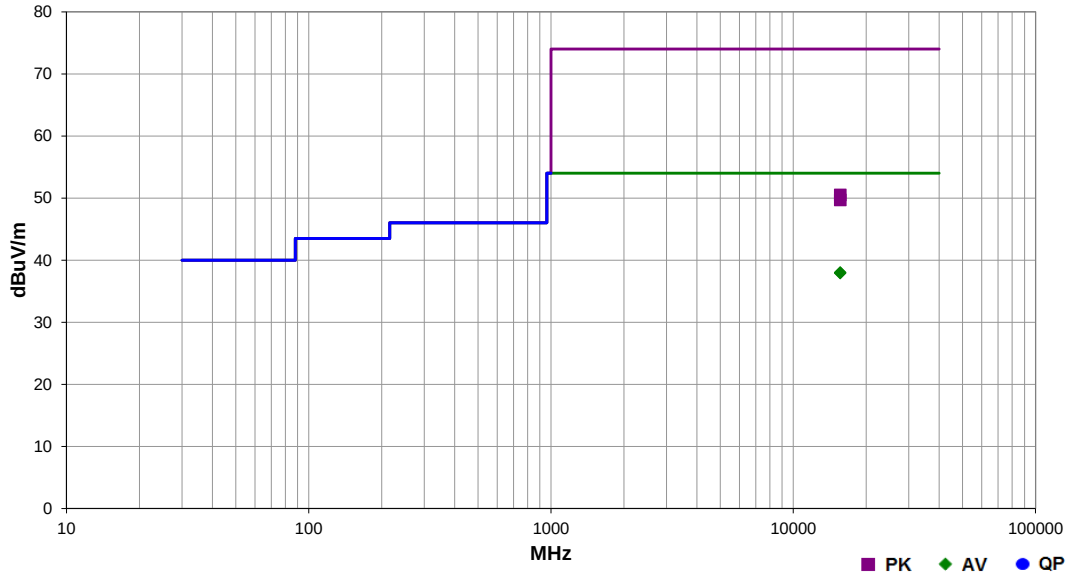
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	APPR0043	**Date:**	05/24/17	Jonathan Kiefer	
Project:	None	**Temperature:**	22.5 °C		
Job Site:	TX02	**Humidity:**	43.5% RH		
Serial Number:	None	**Barometric Pres.:**	1014 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	2				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Mid Ch 36-48 (5210MHz)				
Deviations:	None				
Comments:	PK and AVG(RMS) data. Harmonics for 80 MHz channel bandwidths, 5.2GHz Band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	59	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



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
15628.700	26.5	11.5	3.2	280.9	3.0	0.0	Vert	AV	0.0	38.0	54.0	-16.0	Mid Ch 36-48, EUT Horizontal, MCS9 (256-QAM)
15627.840	26.4	11.5	1.2	345.0	3.0	0.0	Vert	AV	0.0	37.9	54.0	-16.1	Mid Ch 36-48, EUT Horizontal, MCS0
15627.690	39.0	11.5	3.2	280.9	3.0	0.0	Vert	PK	0.0	50.5	74.0	-23.5	Mid Ch 36-48, EUT Horizontal, MCS9 (256-QAM)
15631.250	38.2	11.5	1.2	345.0	3.0	0.0	Vert	PK	0.0	49.7	74.0	-24.3	Mid Ch 36-48, EUT Horizontal, MCS0

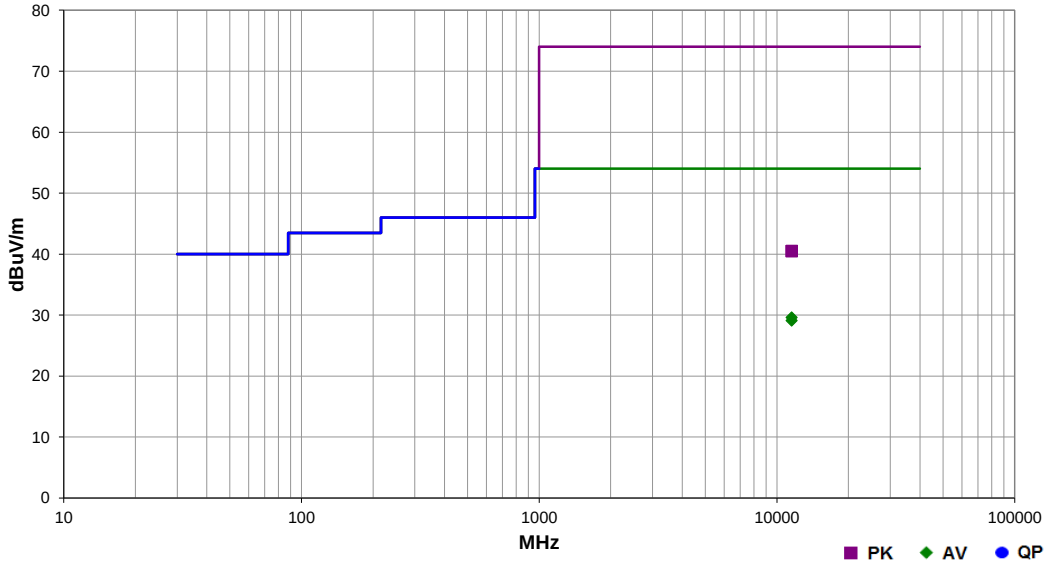
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	APPR0043	**Date:**	05/24/17	Jonathan Kiefer	
Project:	None	**Temperature:**	22.5 °C		
Job Site:	TX02	**Humidity:**	43.5% RH		
Serial Number:	None	**Barometric Pres.:**	1014 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	2				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Mid Ch 149-161 (5775MHz)				
Deviations:	None				
Comments:	PK and AVG(RMS) data. Harmonics for 80 MHz channel bandwidths, 5.8GHz Band. See power table for output power settings used.				

Test Specifications	Test Method
FCC 15.407:2017	ANSI C63.10:2013

Run #	59	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass



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
11550.090	32.6	-3.0	1.2	48.0	3.0	0.0	Vert	AV	0.0	29.6	54.0	-24.4	Mid Ch 149-161, EUT Horizontal, MCS9 (256-QAM)
11549.830	32.1	-3.0	1.2	187.0	3.0	0.0	Vert	AV	0.0	29.1	54.0	-24.9	Mid Ch 149-161, EUT Horizontal, MCS0
11547.510	43.5	-3.0	1.2	187.0	3.0	0.0	Vert	PK	0.0	40.5	74.0	-33.5	Mid Ch 149-161, EUT Horizontal, MCS0
11549.650	43.5	-3.0	1.2	48.0	3.0	0.0	Vert	PK	0.0	40.5	74.0	-33.5	Mid Ch 149-161, EUT Horizontal, MCS9 (256-QAM)

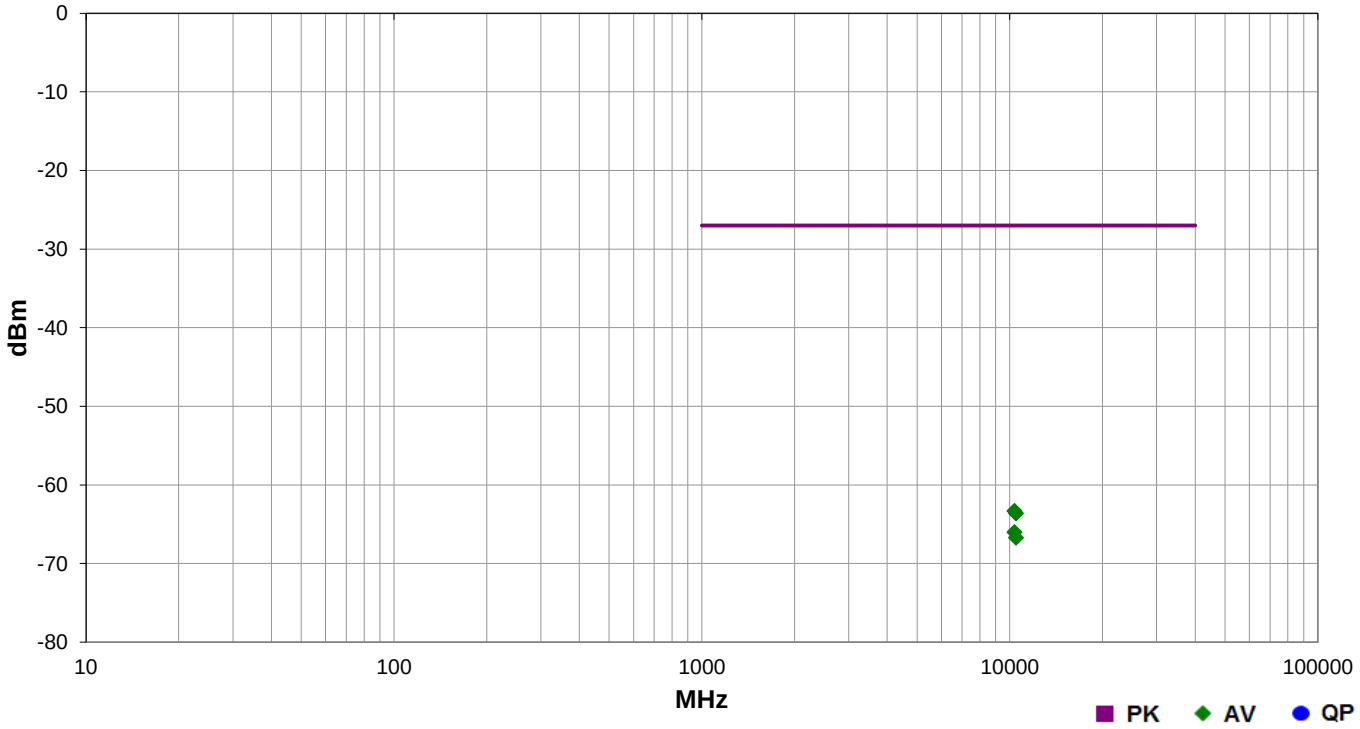
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	APPR0043	**Date:**	05/25/17		
Project:	None	**Temperature:**	23.2 °C		
Job Site:	TX02	**Humidity:**	41.6% RH		
Serial Number:	None	**Barometric Pres.:**	1009 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	2				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Low Ch 36 (5180MHz), High Ch (5240MHz)				
Deviations:	None				
Comments:	-27dBm EIRP limit. Harmonics for 20 MHz channel bandwidths, 5.2GHz Band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	81	**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
	10360.000	2.5	360.0	Vert	AV	4.65E-10	-63.3	-27.0	-36.3	Low Ch 36, EUT Horizontal, 6 Mbps
	10480.030	1.0	2.9	Vert	AV	4.34E-10	-63.6	-27.0	-36.6	High Ch 48, EUT Horizontal, 6 Mbps
	10358.410	1.2	18.0	Horz	AV	2.50E-10	-66.0	-27.0	-39.0	Low Ch 36, EUT Horizontal, 6 Mbps
	10481.120	1.2	132.0	Horz	AV	2.12E-10	-66.7	-27.0	-39.7	High Ch 48, EUT Horizontal, 6 Mbps

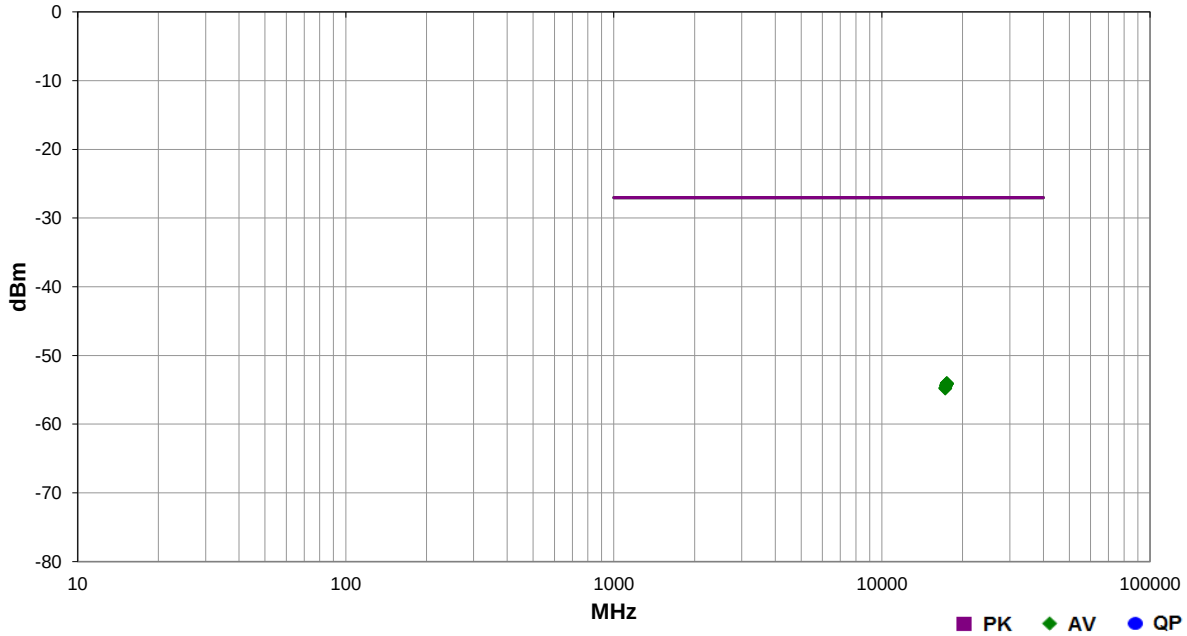
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	APPR0043	**Date:**	05/25/17	Jonathan Kiefer	
Project:	None	**Temperature:**	23.2 °C		
Job Site:	TX02	**Humidity:**	41.6% RH		
Serial Number:	None	**Barometric Pres.:**	1009 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	2				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Low Ch 149 (5745MHz), Mid Ch 157 (5785MHz), High Ch 165 (5825MHz)				
Deviations:	None				
Comments:	-27dBm EIRP limit. Harmonics for 20 MHz channel bandwidths, 5.8GHz Band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	82	**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	
	17473.570	1.2	115.0	Vert	AV	3.95E-09	-54.0	-27.0	-27.0	High Ch 165, EUT Horizontal, MCS7	
	17475.150	1.7	214.8	Vert	AV	3.86E-09	-54.1	-27.0	-27.1	High Ch 165, EUT Horizontal, 6 Mbps	
	17476.740	1.2	231.8	Horz	AV	3.86E-09	-54.1	-27.0	-27.1	High Ch 165, EUT Horizontal, 6 Mbps	
	17473.530	1.2	355.0	Vert	AV	3.86E-09	-54.1	-27.0	-27.1	High Ch 165, EUT Horizontal, 36 Mbps	
	17474.620	1.2	297.7	Vert	AV	3.86E-09	-54.1	-27.0	-27.1	High Ch 165, EUT Horizontal, 54 Mbps	
	17473.430	1.0	81.9	Vert	AV	3.86E-09	-54.1	-27.0	-27.1	High Ch 165, EUT Horizontal, MCS0	
	17472.560	1.2	15.8	Vert	AV	3.86E-09	-54.1	-27.0	-27.1	High Ch 165, EUT Horizontal, MCS8 (256-QAM)	
	17355.740	1.2	349.0	Vert	AV	3.69E-09	-54.3	-27.0	-27.3	Mid Ch 157, EUT Horizontal, 6 Mbps	
	17352.960	1.2	222.0	Horz	AV	3.61E-09	-54.4	-27.0	-27.4	Mid Ch 157, EUT Horizontal, 6 Mbps	
	17232.530	2.3	15.0	Vert	AV	3.37E-09	-54.7	-27.0	-27.7	Low Ch 149, EUT Horizontal, 6 Mbps	
	17233.320	1.2	108.0	Horz	AV	3.29E-09	-54.8	-27.0	-27.8	Low Ch 149, EUT Horizontal, 6 Mbps	

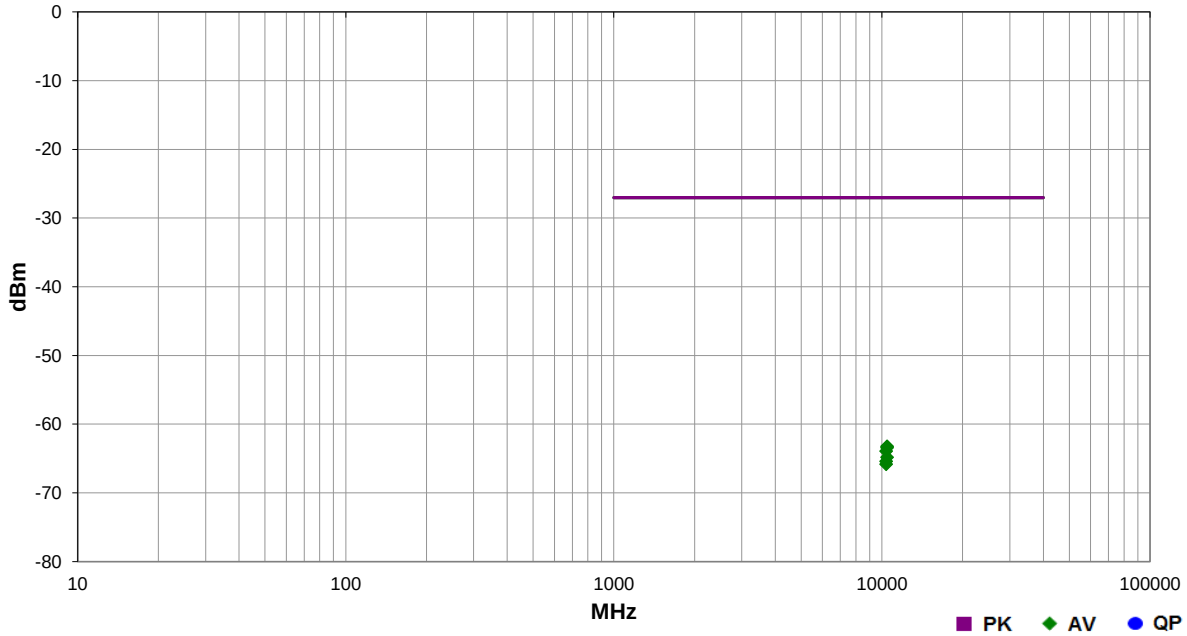
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	APPR0043	**Date:**	05/25/17		
Project:	None	**Temperature:**	23.2 °C		
Job Site:	TX02	**Humidity:**	41.6% RH		
Serial Number:	None	**Barometric Pres.:**	1009 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	2				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Low Ch 36/40 (5190MHz), High Ch 44/48 (5230MHz)				
Deviations:	None				
Comments:	-27dBm EIRP limit. Harmonics for 40 MHz channel bandwidths, 5.2GHz Band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	83	**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	
	10459.580	2.4	-0.1	Vert	AV	4.75E-10	-63.2	-27.0	-36.2	High Ch 44/48, EUT Horizontal, MCS0	
	10458.570	2.7	118.8	Vert	AV	4.54E-10	-63.4	-27.0	-36.4	High Ch 44/48, EUT Horizontal, MCS7	
	10380.510	2.5	3.8	Vert	AV	4.05E-10	-63.9	-27.0	-36.9	Low Ch 36/40, EUT Horizontal, MCS9 (256-QAM)	
	10458.250	1.2	351.8	Vert	AV	3.29E-10	-64.8	-27.0	-37.8	High Ch 44/48, EUT Horizontal, MCS9 (256-QAM)	
	10380.000	3.8	84.0	Vert	AV	2.86E-10	-65.4	-27.0	-38.4	Low Ch 36/40, EUT Horizontal, MCS7	
	10380.090	2.9	3.0	Vert	AV	2.61E-10	-65.8	-27.0	-38.8	Low Ch 36/40, EUT Horizontal, MCS0	

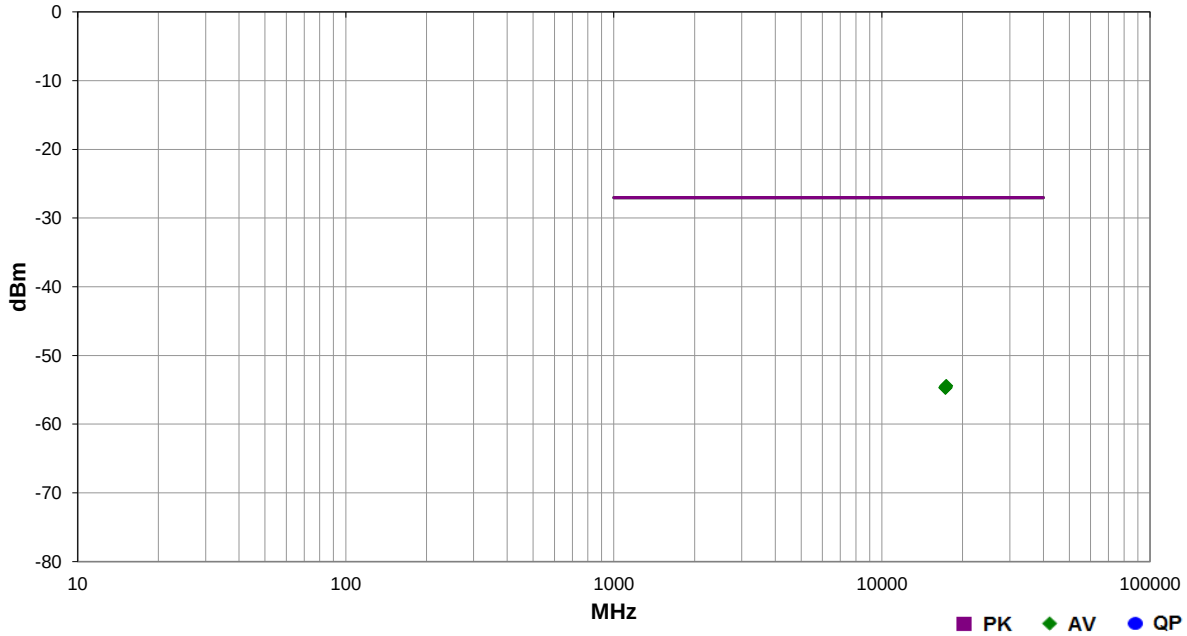
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	APPR0043	**Date:**	05/25/17	Jonathan Kiefer	
Project:	None	**Temperature:**	23.2 °C		
Job Site:	TX02	**Humidity:**	41.6% RH		
Serial Number:	None	**Barometric Pres.:**	1009 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	2				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Low Ch 149/153 (5755MHz), High Ch 157/161 (5795MHz)				
Deviations:	None				
Comments:	-27dBm EIRP limit. Harmonics for 40 MHz channel bandwidths, 5.8GHz Band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	84	**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	
	17385.980	1.2	45.8	Vert	AV	3.61E-09	-54.4	-27.0	-27.4	High Ch 157/161, EUT Horizontal, MCS9 (256-QAM)	
	17262.520	1.0	43.0	Vert	AV	3.44E-09	-54.6	-27.0	-27.6	Low Ch 149/153, EUT Horizontal, MCS0	
	17263.180	1.2	141.0	Vert	AV	3.37E-09	-54.7	-27.0	-27.7	Low Ch 149/153, EUT Horizontal, MCS7	
	17262.860	2.2	258.0	Vert	AV	3.37E-09	-54.7	-27.0	-27.7	Low Ch 149/153, EUT Horizontal, MCS9 (256-QAM)	

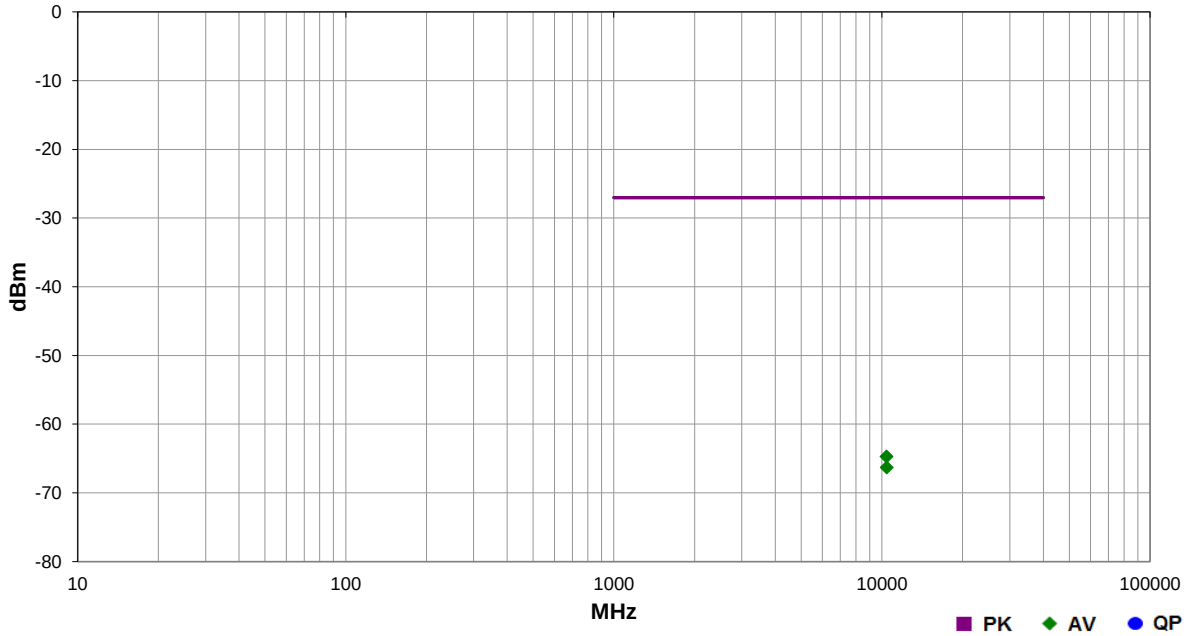
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	APPR0043	**Date:**	05/25/17	Jonathan Kiefer	
Project:	None	**Temperature:**	23.2 °C		
Job Site:	TX02	**Humidity:**	41.6% RH		
Serial Number:	None	**Barometric Pres.:**	1009 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	2				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Mid Ch 36-48 (5210MHz)				
Deviations:	None				
Comments:	-27dBm EIRP limit. Harmonics for 80 MHz channel bandwidths, 5.2GHz Band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	62	**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	
	10417.930	1.2	352.8	Vert	AV	3.37E-10	-64.7	-27.0	-37.7	Mid Ch 36-48, EUT Horizontal, MCS9 (256-QAM)	
	10419.130	1.2	326.9	Vert	AV	2.33E-10	-66.3	-27.0	-39.3	Mid Ch 36-48, EUT Horizontal, MCS0	

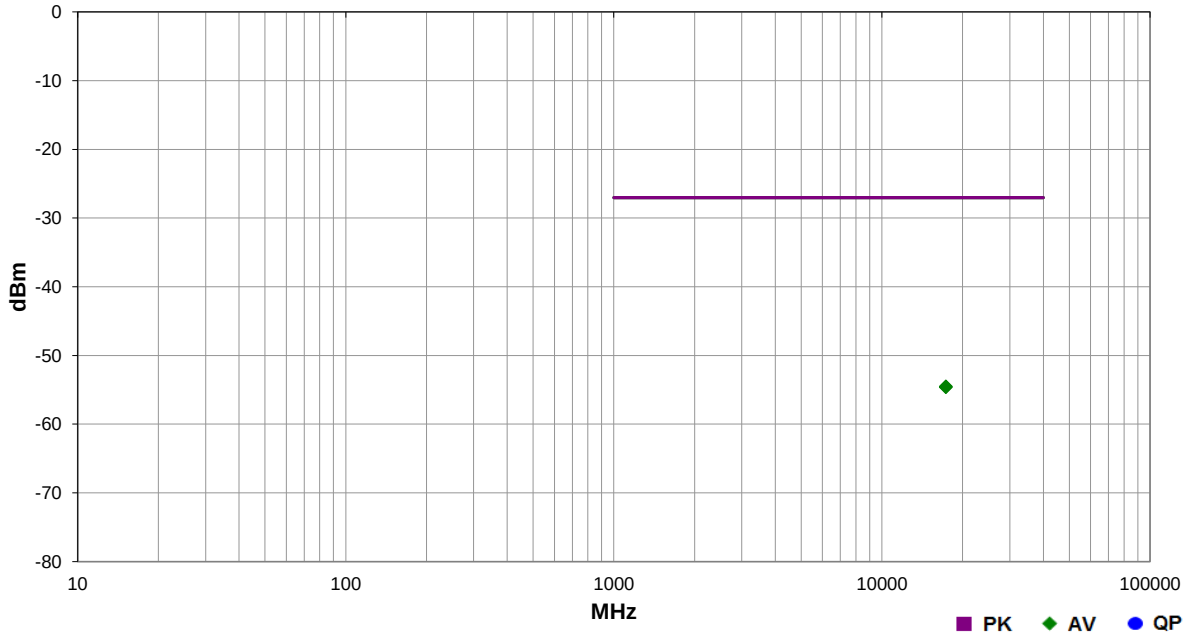
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	APPR0043	**Date:**	05/25/17	Jonathan Kiefer	
Project:	None	**Temperature:**	23.2 °C		
Job Site:	TX02	**Humidity:**	41.6% RH		
Serial Number:	None	**Barometric Pres.:**	1009 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	2				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Mid Ch 149-161 (5775MHz)				
Deviations:	None				
Comments:	-27dBm EIRP limit. Harmonics for 80 MHz channel bandwidths, 5.8GHz Band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	62	**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	
	17326.440	1.2	76.8	Vert	AV	3.52E-09	-54.5	-27.0	-27.5	Mid Ch 149-161, EUT Horizontal, MCS9 (256-QAM)	
	17323.130	1.2	360.0	Vert	AV	3.44E-09	-54.6	-27.0	-27.6	Mid Ch 149-161, EUT Horizontal, MCS0	

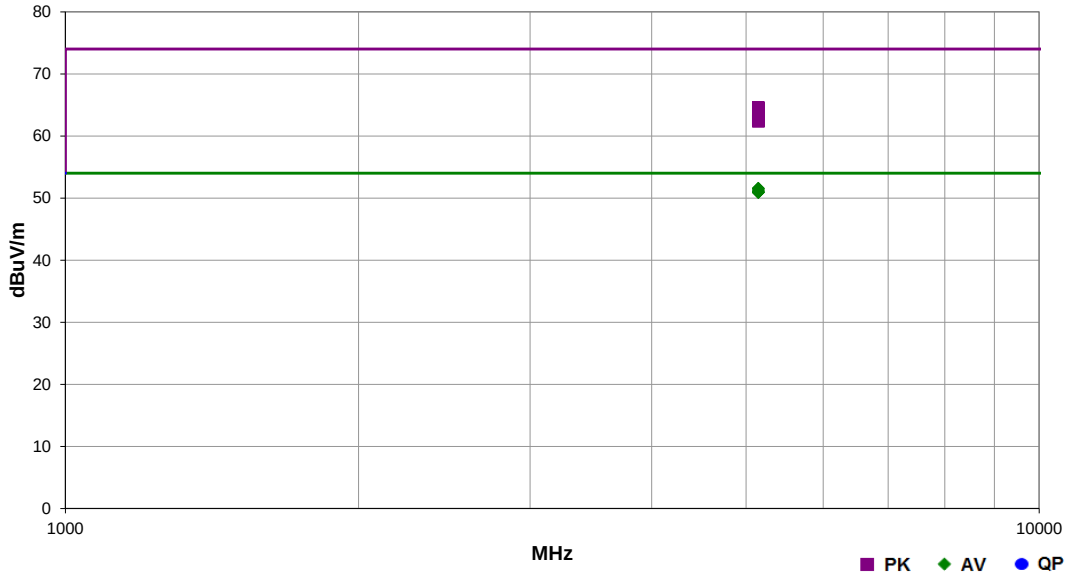
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	APPR0043	**Date:**	05/26/17	Jonathan Kiefer	
Project:	None	**Temperature:**			
Job Site:	TX02	**Humidity:**			
Serial Number:	None	**Barometric Pres.:**		**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	2				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Low Ch 36 (5180MHz)				
Deviations:	None				
Comments:	PK and AVG(RMS) data. Transmit Band Edge for 20 MHz channel bandwidths, 5.2GHz Band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	74	**Test Distance (m)**	1	**Antenna Height(s)**	1.6(m)	**Results**	Pass



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
5149.173	27.1	34.0	1.5	276.0	1.0	0.0	Horz	AV	-9.5	51.6	54.0	-2.4	Low Ch 36, EUT Horizontal, MCS7
5149.970	27.0	34.0	1.5	285.9	1.0	0.0	Horz	AV	-9.5	51.5	54.0	-2.5	Low Ch 36, EUT Horizontal, 6 Mbps
5149.927	27.0	34.0	1.5	283.0	1.0	0.0	Horz	AV	-9.5	51.5	54.0	-2.5	Low Ch 36, EUT Horizontal, 54 Mbps
5149.537	26.8	34.0	1.5	303.0	1.0	0.0	Horz	AV	-9.5	51.3	54.0	-2.7	Low Ch 36, EUT Horizontal, MCS8 (256-QAM)
5149.633	26.7	34.0	1.5	115.0	1.0	0.0	Vert	AV	-9.5	51.2	54.0	-2.8	Low Ch 36, EUT Vertical, 6 Mbps
5149.613	26.5	34.0	1.5	270.0	1.0	0.0	Horz	AV	-9.5	51.0	54.0	-3.0	Low Ch 36, EUT Vertical, 6 Mbps
5149.737	26.5	34.0	1.5	261.0	1.0	0.0	Horz	AV	-9.5	51.0	54.0	-3.0	Low Ch 36, EUT On Side, 6 Mbps
5148.733	26.4	34.0	1.5	172.9	1.0	0.0	Vert	AV	-9.5	50.9	54.0	-3.1	Low Ch 36, EUT Horizontal, 6 Mbps
5149.890	26.4	34.0	1.5	324.0	1.0	0.0	Vert	AV	-9.5	50.9	54.0	-3.1	Low Ch 36, EUT On Side, 6 Mbps
5149.197	26.4	34.0	1.5	136.9	1.0	0.0	Horz	AV	-9.5	50.9	54.0	-3.1	Low Ch 36, EUT Horizontal, 36 Mbps
5149.480	26.4	34.0	1.5	28.9	1.0	0.0	Horz	AV	-9.5	50.9	54.0	-3.1	Low Ch 36, EUT Horizontal, MCS0
5149.313	40.1	34.0	1.5	276.0	1.0	0.0	Horz	PK	-9.5	64.6	74.0	-9.4	Low Ch 36, EUT Horizontal, MCS7
5149.443	40.0	34.0	1.5	283.0	1.0	0.0	Horz	PK	-9.5	64.5	74.0	-9.5	Low Ch 36, EUT Horizontal, 54 Mbps
5149.877	39.6	34.0	1.5	285.9	1.0	0.0	Horz	PK	-9.5	64.1	74.0	-9.9	Low Ch 36, EUT Horizontal, 6 Mbps
5148.413	39.2	34.0	1.5	303.0	1.0	0.0	Horz	PK	-9.5	63.7	74.0	-10.3	Low Ch 36, EUT Horizontal, MCS8 (256-QAM)
5149.910	38.9	34.0	1.5	115.0	1.0	0.0	Vert	PK	-9.5	63.4	74.0	-10.6	Low Ch 36, EUT Vertical, 6 Mbps
5149.200	38.3	34.0	1.5	270.0	1.0	0.0	Horz	PK	-9.5	62.8	74.0	-11.2	Low Ch 36, EUT Vertical, 6 Mbps
5149.907	38.3	34.0	1.5	28.9	1.0	0.0	Horz	PK	-9.5	62.8	74.0	-11.2	Low Ch 36, EUT Horizontal, MCS0
5149.340	38.1	34.0	1.5	261.0	1.0	0.0	Horz	PK	-9.5	62.6	74.0	-11.4	Low Ch 36, EUT On Side, 6 Mbps
5148.050	38.0	34.0	1.5	172.9	1.0	0.0	Vert	PK	-9.5	62.5	74.0	-11.5	Low Ch 36, EUT Horizontal, 6 Mbps
5148.327	37.9	34.0	1.5	324.0	1.0	0.0	Vert	PK	-9.5	62.4	74.0	-11.6	Low Ch 36, EUT On Side, 6 Mbps
5149.857	37.9	34.0	1.5	136.9	1.0	0.0	Horz	PK	-9.5	62.4	74.0	-11.6	Low Ch 36, EUT Horizontal, 36 Mbps

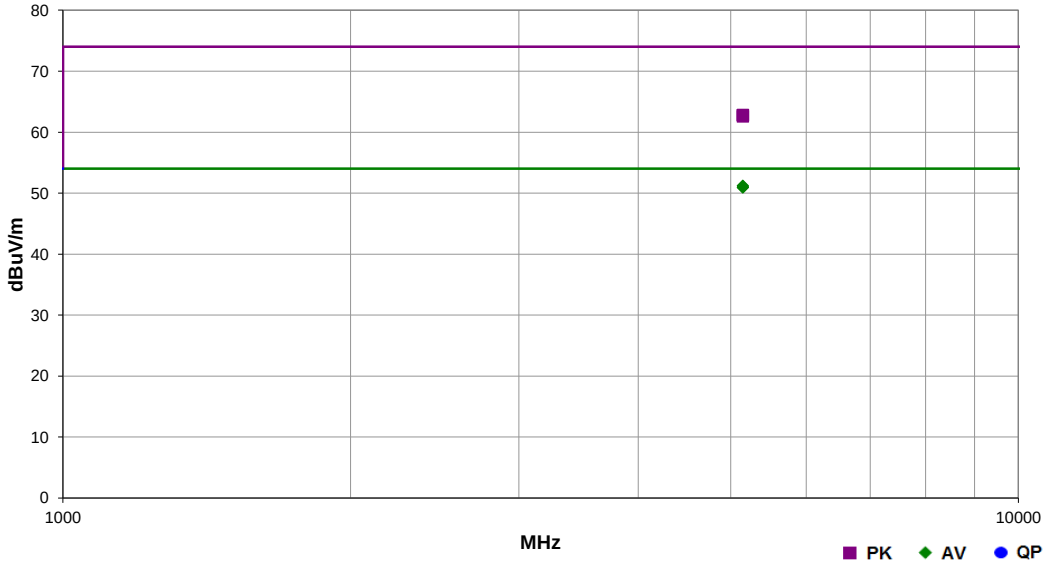
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	APPR0043	**Date:**	05/26/17	Jonathan Kiefer	
Project:	None	**Temperature:**			
Job Site:	TX02	**Humidity:**			
Serial Number:	None	**Barometric Pres.:**		**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	2				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Low Ch 36/40 (5190MHz)				
Deviations:	None				
Comments:	PK and AVG(RMS) data. Transmit Band Edge for 40 MHz channel bandwidths, 5.2GHz Band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	74	**Test Distance (m)**	1	**Antenna Height(s)**	1.6(m)	**Results**	Pass



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
5149.527	26.7	34.0	1.5	271.0	1.0	0.0	Horz	AV	-9.5	51.2	54.0	-2.8	Low Ch 36/40, EUT Horizontal, MCS9 (256-QAM)
5149.920	26.5	34.0	1.5	188.0	1.0	0.0	Horz	AV	-9.5	51.0	54.0	-3.0	Low Ch 36/40, EUT Horizontal, MCS7
5149.597	26.4	34.0	1.5	136.9	1.0	0.0	Horz	AV	-9.5	50.9	54.0	-3.1	Low Ch 36/40, EUT Horizontal, MCS0
5149.227	38.3	34.0	1.5	136.9	1.0	0.0	Horz	PK	-9.5	62.8	74.0	-11.2	Low Ch 36/40, EUT Horizontal, MCS0
5149.363	38.3	34.0	1.5	271.0	1.0	0.0	Horz	PK	-9.5	62.8	74.0	-11.2	Low Ch 36/40, EUT Horizontal, MCS9 (256-QAM)
5148.723	38.1	34.0	1.5	188.0	1.0	0.0	Horz	PK	-9.5	62.6	74.0	-11.4	Low Ch 36/40, EUT Horizontal, MCS7

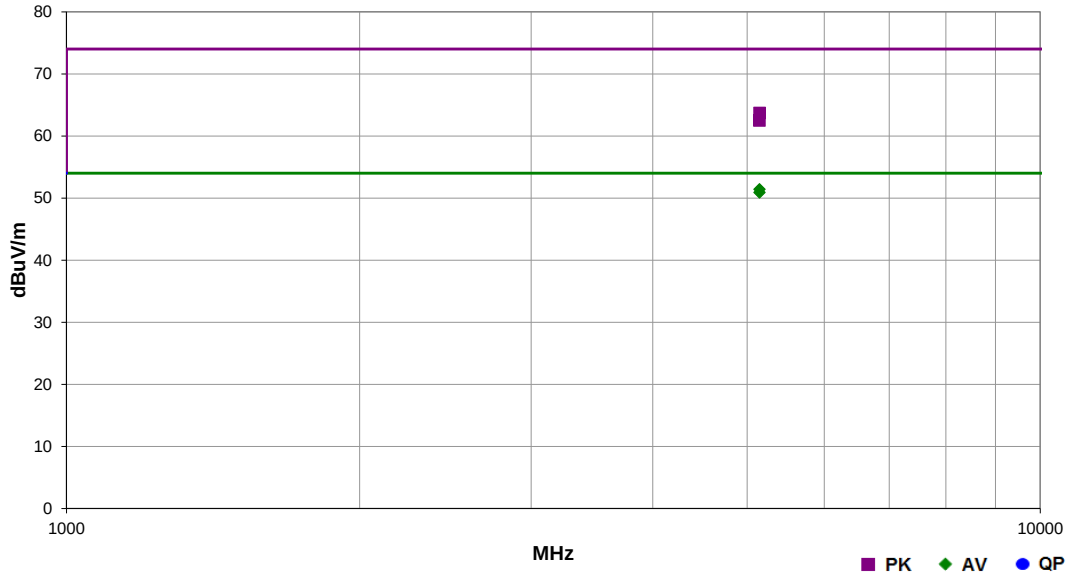
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	APPR0043	**Date:**	05/26/17	Jonathan Kiefer	
Project:	None	**Temperature:**			
Job Site:	TX02	**Humidity:**			
Serial Number:	None	**Barometric Pres.:**		**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	2				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Mid Ch 36-48 (5210MHz)				
Deviations:	None				
Comments:	PK and AVG(RMS) data. Transmit Band Edge for 80 MHz channel bandwidths, 5.2GHz Band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	74	**Test Distance (m)**	1	**Antenna Height(s)**	1.6(m)	**Results**	Pass



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
5149.697	26.9	34.0	1.5	279.9	1.0	0.0	Horz	AV	-9.5	51.4	54.0	-2.6	Mid Ch 36-48, EUT Horizontal, MCS9 (256-QAM)
5149.517	26.4	34.0	1.5	164.0	1.0	0.0	Horz	AV	-9.5	50.9	54.0	-3.1	Mid Ch 36-48, EUT Horizontal, MCS0
5149.647	39.2	34.0	1.5	279.9	1.0	0.0	Horz	PK	-9.5	63.7	74.0	-10.3	Mid Ch 36-48, EUT Horizontal, MCS9 (256-QAM)
5148.773	38.0	34.0	1.5	164.0	1.0	0.0	Horz	PK	-9.5	62.5	74.0	-11.5	Mid Ch 36-48, EUT Horizontal, MCS0

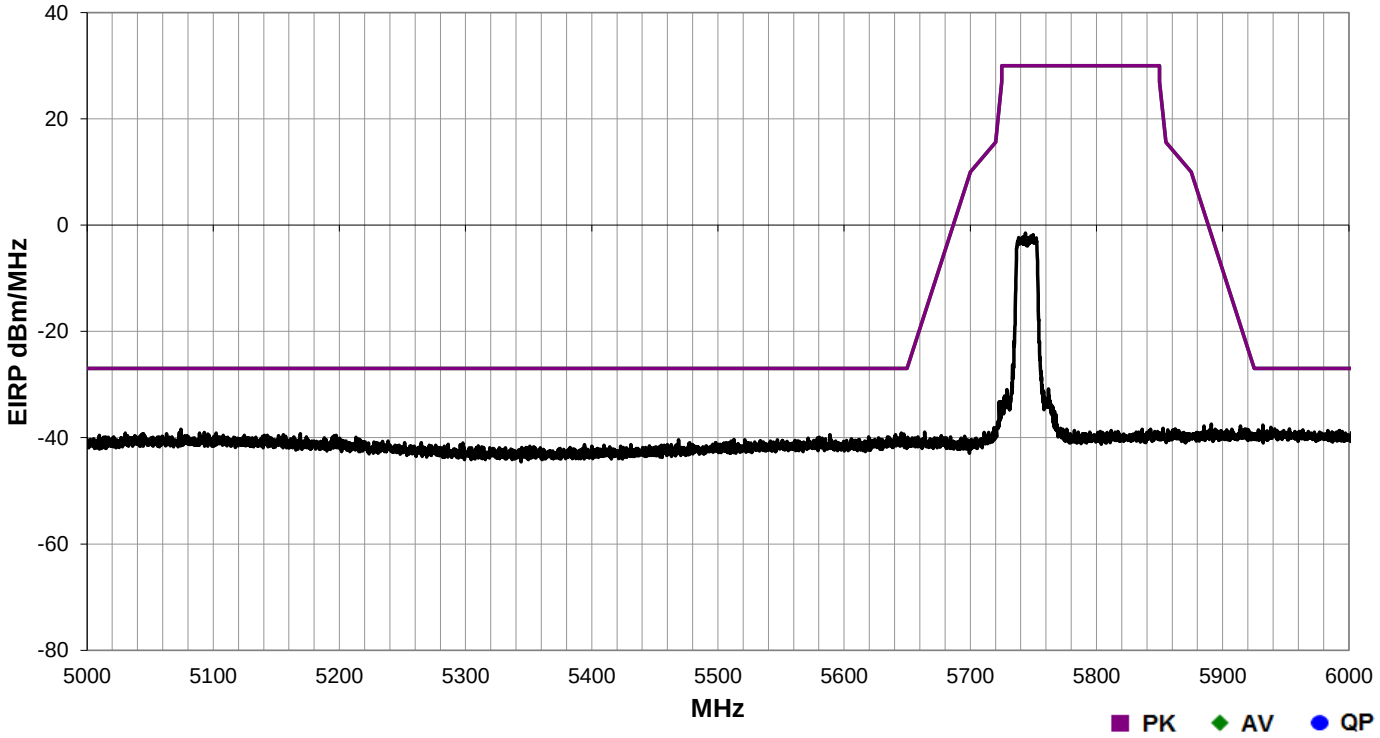
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	APPR0043	**Date:**	05/29/17	Jonathan Kiefer	
Project:	None	**Temperature:**	22.9 °C		
Job Site:	TX02	**Humidity:**	49.7% RH		
Serial Number:	None	**Barometric Pres.:**	1017 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	2				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Low Ch 149 (5745MHz)				
Deviations:	None				
Comments:	AVG(RMS) scan. Transmit Band Edge for 20MHz channel bandwidths, 5.8 GHz band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	76	**Test Distance (m)**	1	**Antenna Height(s)**	1.25 (m)	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Transducer (dB)	Polarity/ Transducer Type	Detector	EIRP (Watts/MHz)	EIRP (dBm/MHz)	Spec. Limit (dBm/MHz)	Compared to Spec. (dB)	Comments

All emissions were below the limit (see graph above).

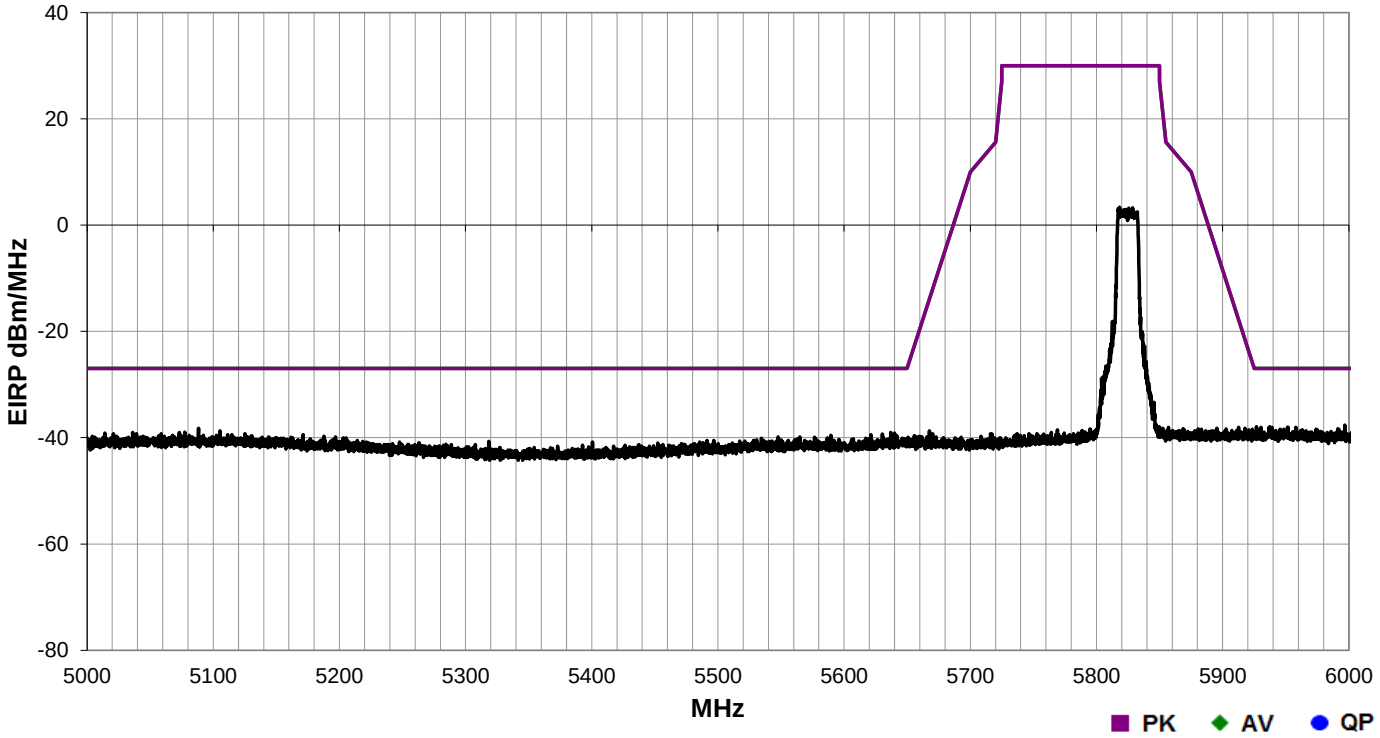
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	APPR0043	**Date:**	05/29/17	Jonathan Kiefer	
Project:	None	**Temperature:**	22.9 °C		
Job Site:	TX02	**Humidity:**	49.7% RH		
Serial Number:	None	**Barometric Pres.:**	1017 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	2				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at High Ch 165 (5825MHz)				
Deviations:	None				
Comments:	AVG(RMS) scan. Transmit Band Edge for 20MHz channel bandwidths, 5.8 GHz band. See power table for output power settings used.				

Test Specifications	Test Method
FCC 15.407:2017	ANSI C63.10:2013

Run #	77	Test Distance (m)	1	Antenna Height(s)	1.25 (m)	Results	Pass



	Freq (MHz)	Antenna Height (meters)	Transducer (dB)	Polarity/ Transducer Type	Detector	EIRP (Watts/MHz)	EIRP (dBm/MHz)	Spec. Limit (dBm/MHz)	Compared to Spec. (dB)	Comments

All emissions were below the limit (see graph above).

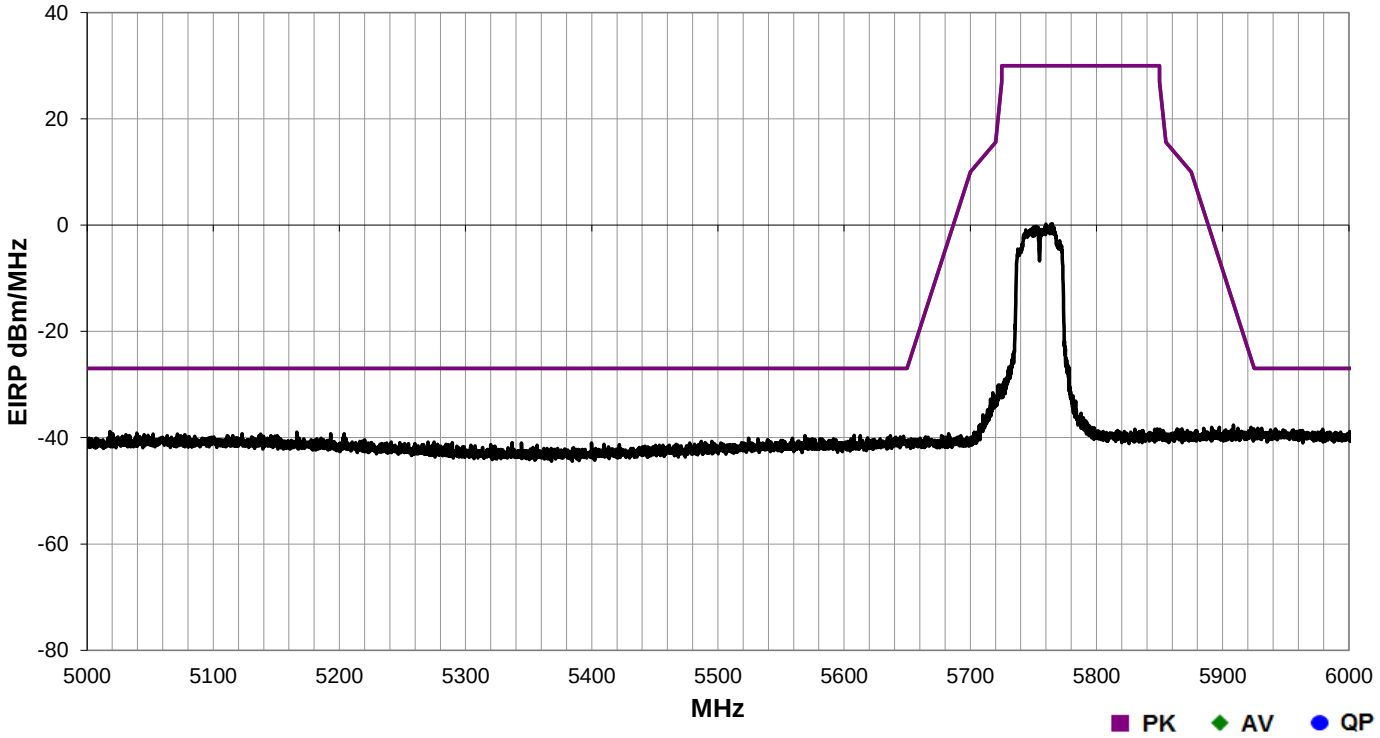
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	APPR0043	**Date:**	05/29/17	Jonathan Kiefer	
Project:	None	**Temperature:**	22.9 °C		
Job Site:	TX02	**Humidity:**	49.7% RH		
Serial Number:	None	**Barometric Pres.:**	1017 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	2				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Low Ch 149/153 (5755MHz)				
Deviations:	None				
Comments:	AVG(RMS) scan. Transmit Band Edge for 40MHz channel bandwidths, 5.8 GHz band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	78	**Test Distance (m)**	1	**Antenna Height(s)**	1.25 (m)	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Transducer (dB)	Polarity/ Transducer Type	Detector	EIRP (Watts/MHz)	EIRP (dBm/MHz)	Spec. Limit (dBm/MHz)	Compared to Spec. (dB)	Comments

All emissions were below the limit (see graph above).

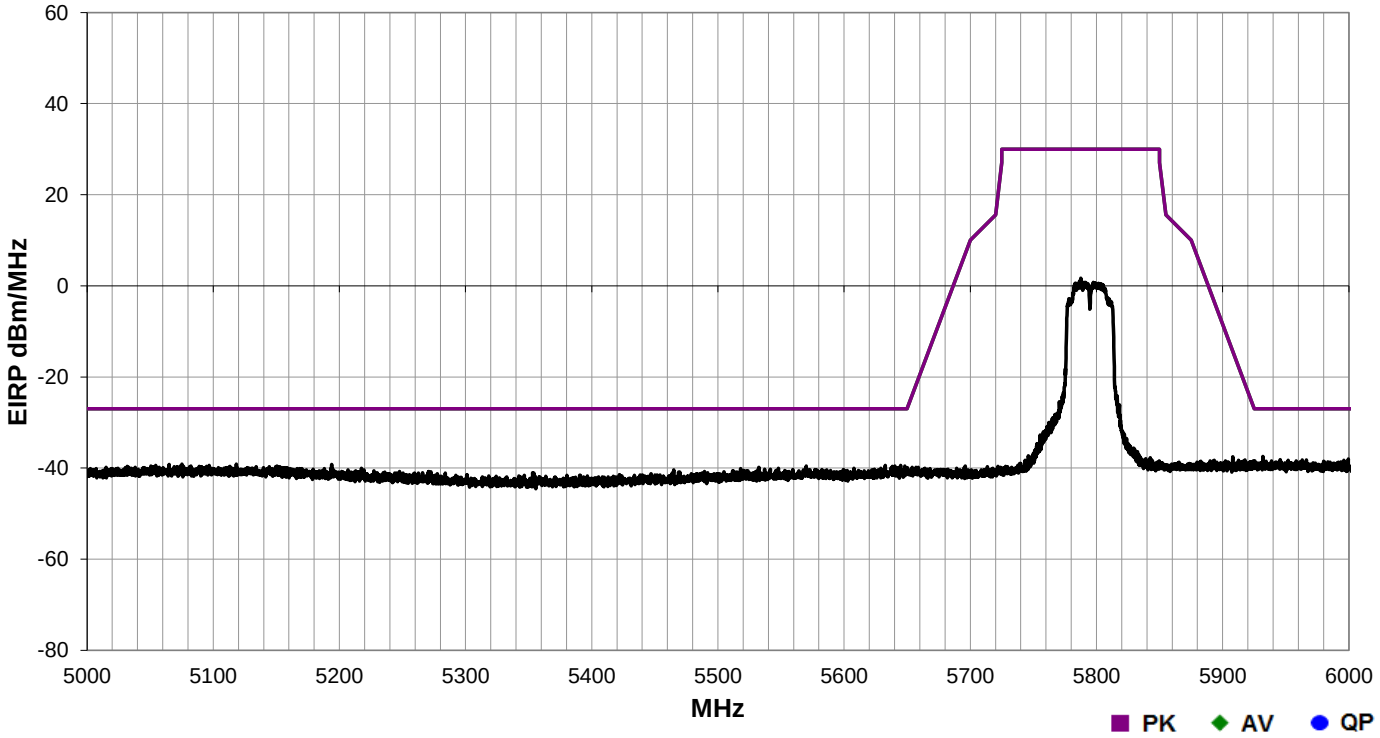
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	APPR0043	**Date:**	05/29/17		
Project:	None	**Temperature:**	22.9 °C		
Job Site:	TX02	**Humidity:**	49.7% RH		
Serial Number:	None	**Barometric Pres.:**	1017 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	2				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at High Ch 157/161 (5795MHz)				
Deviations:	None				
Comments:	AVG(RMS) scan. Transmit Band Edge for 40MHz channel bandwidths, 5.8 GHz band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	79	**Test Distance (m)**	1	**Antenna Height(s)**	1.25 (m)	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Transducer (dB)	Polarity/ Transducer Type	Detector	EIRP (Watts/MHz)	EIRP (dBm/MHz)	Spec. Limit (dBm/MHz)	Compared to Spec. (dB)	Comments

All emissions were below the limit (see graph above).

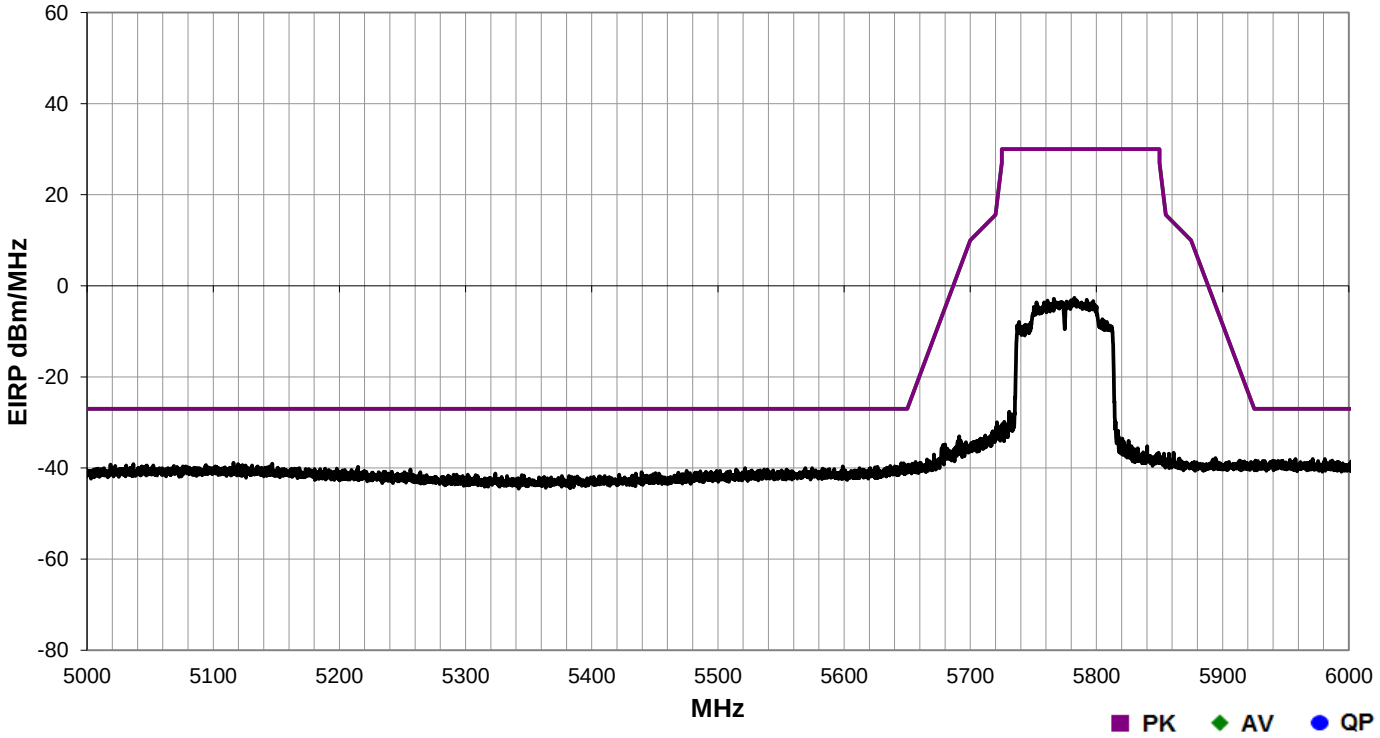
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	APPR0043	**Date:**	05/29/17	Jonathan Kiefer	
Project:	None	**Temperature:**	22.9 °C		
Job Site:	TX02	**Humidity:**	49.7% RH		
Serial Number:	None	**Barometric Pres.:**	1017 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	2				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Mid Ch 149-161 (5775MHz)				
Deviations:	None				
Comments:	AVG(RMS) scan. Transmit Band Edge for 80MHz channel bandwidths, 5.8 GHz band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	80	**Test Distance (m)**	1	**Antenna Height(s)**	1.25 (m)	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Transducer (dB)	Polarity/ Transducer Type	Detector	EIRP (Watts/MHz)	EIRP (dBm/MHz)	Spec. Limit (dBm/MHz)	Compared to Spec. (dB)	Comments

All emissions were below the limit (see graph above).

SPURIOUS RADIATED EMISSIONS

PSA-ESCI 2017.06.01

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

Transmitting Continuously at Low Ch 100-112 (5530MHz)
Transmitting Continuously at Low Ch 100/104 (5510MHz)
Transmitting Continuously at Low Ch 100 (5500MHz)
Transmitting Continuously at Low Ch 52-64 (5290MHz)
Transmitting Continuously at High Ch 60/64 (5310MHz)
Transmitting Continuously at High Ch 64 (5320MHz)
Transmitting Continuously at Low Ch 100-112 (5530MHz), High Ch 116-128 (5610MHz)
Transmitting Continuously at Low Ch 52-64 (5290MHz)
Transmitting Continuously at Low Ch 52/56 (5270MHz), High Ch 60/64 (5310MHz)
Transmitting Continuously at Low Ch 100/104 (5510MHz), Mid Ch 116/120 (5590MHz), High Ch 132/136 (5670MHz)
Transmitting Continuously at Low Ch 52/26 (5270MHz)
Transmitting Continuously at Low Ch 52 (5260MHz)
Transmitting Continuously at Low Ch 52 (5260MHz), High Ch 64 (5320MHz)
Transmitting Continuously at Low Ch 100 (5500MHz), Mid Ch 116 (5580MHz), High Ch 140 (5700MHz)

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

APPR0050 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	40000 MHz

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
Cable	Fairview Microwave	SCK0963-60	TXF	11/18/2016	12 mo
Filter - Band Pass/Notch	Micro-Tronics	BRC50704	HGB	3/1/2017	12 mo
Filter - Band Pass/Notch	Micro-Tronics	BRC50703	HGH	6/8/2017	12 mo
Filter - Low Pass	Micro-Tronics	LPM50004	HHV	8/3/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	JSDWK42-18004000-60-5P	PAM	11/18/2016	12 mo
Antenna - Double Ridge	A.H. Systems, Inc.	SAS-574	AXW	8/5/2016	24 mo
Cable	Northwest EMC	18-40GHz	TXE	11/18/2016	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	PAL	10/12/2016	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AJG	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	PAK	10/18/2016	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AJF	NCR	0 mo
Cable	Northwest EMC	8-18GHz	TXD	5/31/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAJ	5/31/2017	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AJN	9/15/2016	24 mo
Cable	Northwest EMC	1-8.2 GHz	TXC	5/31/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1551	PAH	11/9/2016	12 mo
Antenna - Biconilog	ETS Lindgren	3143B	AYF	4/13/2016	24 mo
Cable	Northwest EMC	RE 9kHz - 1GHz	TXB	11/9/2016	12 mo
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	10/4/2016	12 mo

and included in this test report.

The individual 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 if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector
PK = Peak Detector
AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

Measurements at the edges of the allowable band may be presented in an alternative method as provided for in the ANSI C63.10 Marker-Delta method. This method involves performing an in-band fundamental measurement followed by a screen capture of the fundamental and out-of-band emission using reduced measurement instrumentation bandwidths. The amplitude delta measured on this screen capture is applied to the fundamental emission value to show the out-of-band emission level as applied to the limit.

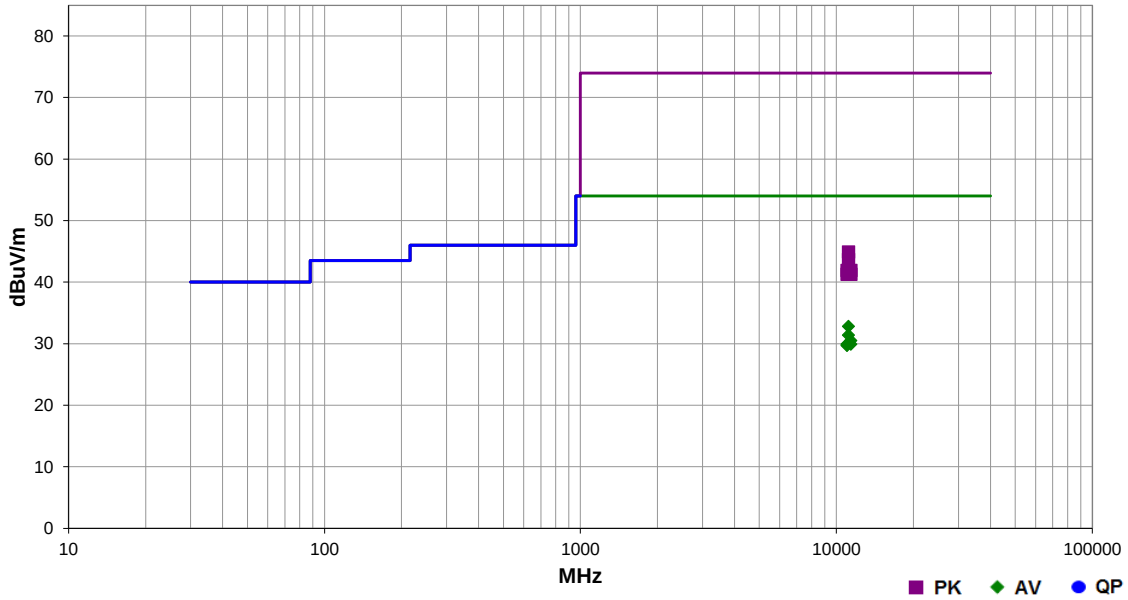
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.07.11 PSA-ESCI 2017.06.01

Work Order:	APPR0050	**Date:**	08/25/17	Jonathan Kiefer	
Project:	None	**Temperature:**	24.3 °C		
Job Site:	TX02	**Humidity:**	50.9% RH		
Serial Number:	None	**Barometric Pres.:**	1017 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	1				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Low Ch 100 (5500MHz), Mid Ch 116 (5580MHz), High Ch 140 (5700MHz)				
Deviations:	None				
Comments:	PK and AVG(RMS) data. Harmonics for 20 MHz channel bandwidths, 5.6GHz Band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	16	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



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
11160.470	35.3	-2.5	1.2	358.9	3.0	0.0	Horz	AV	0.0	32.8	54.0	-21.2	Mid Ch 116, EUT Horizontal, 6 Mbps
11160.250	33.9	-2.5	1.2	232.9	3.0	0.0	Vert	AV	0.0	31.4	54.0	-22.6	Mid Ch 116, EUT Horizontal, 6 Mbps
11400.000	33.3	-2.8	1.2	351.0	3.0	0.0	Vert	AV	0.0	30.5	54.0	-23.5	High Ch 140, EUT Horizontal, 6 Mbps
11399.980	32.7	-2.8	1.2	177.0	3.0	0.0	Horz	AV	0.0	29.9	54.0	-24.1	High Ch 140, EUT Horizontal, 6 Mbps
11000.810	32.5	-2.6	1.2	356.0	3.0	0.0	Horz	AV	0.0	29.9	54.0	-24.1	Low Ch 100, EUT Horizontal, 6 Mbps
11001.290	32.3	-2.6	1.2	20.0	3.0	0.0	Vert	AV	0.0	29.7	54.0	-24.3	Low Ch 100, EUT Horizontal, 6 Mbps
11161.210	47.4	-2.5	1.2	358.9	3.0	0.0	Horz	PK	0.0	44.9	74.0	-29.1	Mid Ch 116, EUT Horizontal, 6 Mbps
11159.390	46.2	-2.5	1.2	232.9	3.0	0.0	Vert	PK	0.0	43.7	74.0	-30.3	Mid Ch 116, EUT Horizontal, 6 Mbps
11400.090	44.7	-2.8	1.2	351.0	3.0	0.0	Vert	PK	0.0	41.9	74.0	-32.1	High Ch 140, EUT Horizontal, 6 Mbps
11000.870	44.5	-2.6	1.2	356.0	3.0	0.0	Horz	PK	0.0	41.9	74.0	-32.1	Low Ch 100, EUT Horizontal, 6 Mbps
11399.180	44.1	-2.8	1.2	177.0	3.0	0.0	Horz	PK	0.0	41.3	74.0	-32.7	High Ch 140, EUT Horizontal, 6 Mbps
11001.320	43.9	-2.6	1.2	20.0	3.0	0.0	Vert	PK	0.0	41.3	74.0	-32.7	Low Ch 100, EUT Horizontal, 6 Mbps

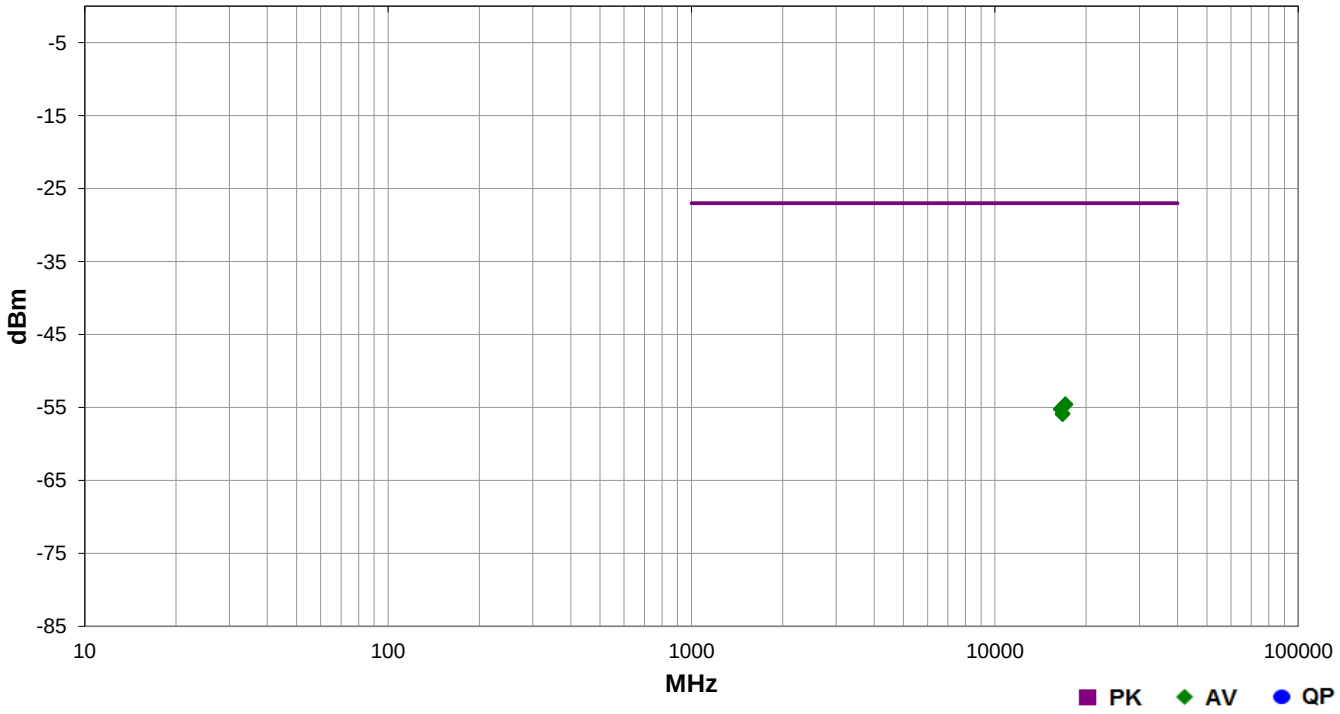
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.07.11 PSA-ESCI 2017.06.01

Work Order:	APPR0050	**Date:**	08/25/17		
Project:	None	**Temperature:**	24.3 °C		
Job Site:	TX02	**Humidity:**	50.9% RH		
Serial Number:	None	**Barometric Pres.:**	1017 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	1				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Low Ch 100 (5500MHz), Mid Ch 116 (5580MHz), High Ch 140 (5700MHz)				
Deviations:	None				
Comments:	-27dBm EIRP limit. Harmonics for 20 MHz channel bandwidths, 5.6GHz Band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	17	**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
	17100.480	1.2	49.0	Vert	AV	3.52E-09	-54.5	-27.0	-27.5	High Ch 140, EUT Horizontal, 6 Mbps
	17100.070	1.2	259.0	Horz	AV	3.44E-09	-54.6	-27.0	-27.6	High Ch 140, EUT Horizontal, 6 Mbps
	16500.670	1.2	117.9	Horz	AV	3.00E-09	-55.2	-27.0	-28.2	Low Ch 100, EUT Horizontal, 6 Mbps
	16498.890	1.2	26.0	Vert	AV	3.00E-09	-55.2	-27.0	-28.2	Low Ch 100, EUT Horizontal, 6 Mbps
	16740.660	1.2	79.0	Horz	AV	2.61E-09	-55.8	-27.0	-28.8	Mid Ch 116, EUT Horizontal, 6 Mbps
	16738.930	1.2	45.0	Vert	AV	2.55E-09	-55.9	-27.0	-28.9	Mid Ch 116, EUT Horizontal, 6 Mbps

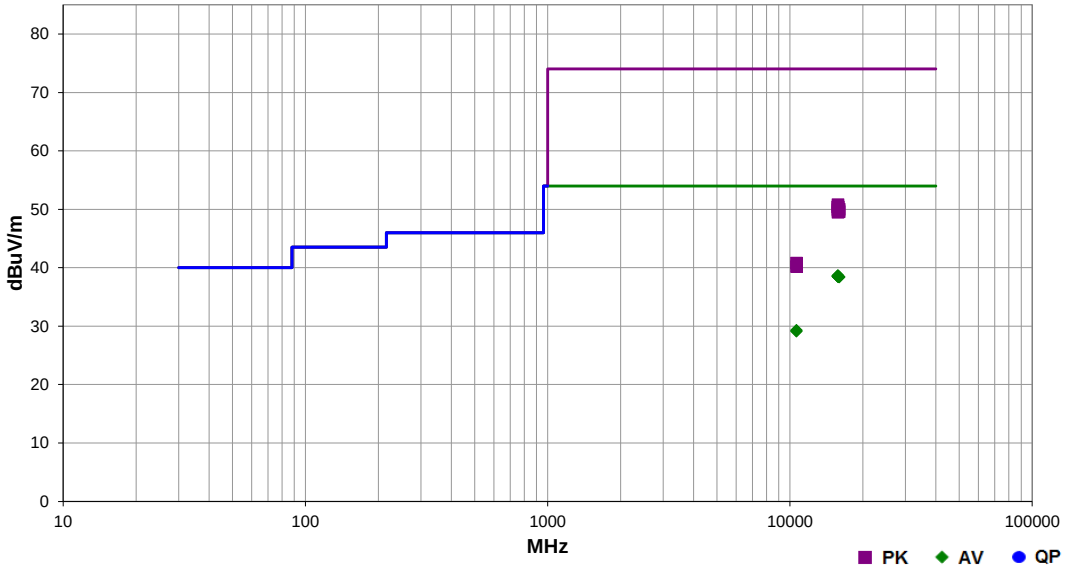
SPURIOUS RADIATED EMISSIONS

EmIR5 2017.07.11 PSA-ESCI 2017.06.01

Work Order:	APPR0050	**Date:**	08/25/17	Jonathan Kiefer	
Project:	None	**Temperature:**	24.3 °C		
Job Site:	TX02	**Humidity:**	50.9% RH		
Serial Number:	None	**Barometric Pres.:**	1017 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	1				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Low Ch 52 (5260MHz), High Ch 64 (5320MHz)				
Deviations:	None				
Comments:	PK and AVG(RMS) data. Harmonics for 20 MHz channel bandwidths, 5.3GHz Band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	18	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



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
15779.890	26.5	12.1	1.2	151.0	3.0	0.0	Vert	AV	0.0	38.6	54.0	-15.4	Low Ch 52, EUT Horizontal, 6 Mbps
15781.220	26.4	12.1	1.2	99.0	3.0	0.0	Horz	AV	0.0	38.5	54.0	-15.5	Low Ch 52, EUT Horizontal, 6 Mbps
15960.210	25.8	12.6	1.7	21.0	3.0	0.0	Horz	AV	0.0	38.4	54.0	-15.6	High Ch 64, EUT Horizontal, 6 Mbps
15960.530	25.8	12.6	1.2	91.0	3.0	0.0	Vert	AV	0.0	38.4	54.0	-15.6	High Ch 64, EUT Horizontal, 6 Mbps
15780.120	38.3	12.1	1.2	274.9	3.0	0.0	Vert	PK	0.0	50.4	68.2	-17.8	Low Ch 52, EUT Horizontal, 36 Mbps
15780.680	38.3	12.1	1.2	4.9	3.0	0.0	Vert	PK	0.0	50.4	68.2	-17.8	Low Ch 52, EUT Horizontal, 54 Mbps
15779.090	37.9	12.1	1.2	132.0	3.0	0.0	Vert	PK	0.0	50.0	68.2	-18.2	Low Ch 52, EUT Horizontal, MCS0
15780.630	37.7	12.1	1.2	147.9	3.0	0.0	Vert	PK	0.0	49.8	68.2	-18.4	Low Ch 52, EUT Horizontal, MCS8 (256-QAM)
15781.040	37.4	12.1	1.2	291.0	3.0	0.0	Vert	PK	0.0	49.5	68.2	-18.7	Low Ch 52, EUT Horizontal, MCS7
15780.270	38.7	12.1	1.2	99.0	3.0	0.0	Horz	PK	0.0	50.8	74.0	-23.2	Low Ch 52, EUT Horizontal, 6 Mbps
15779.250	38.3	12.1	1.2	151.0	3.0	0.0	Vert	PK	0.0	50.4	74.0	-23.6	Low Ch 52, EUT Horizontal, 6 Mbps
15960.830	37.4	12.6	1.7	21.0	3.0	0.0	Horz	PK	0.0	50.0	74.0	-24.0	High Ch 64, EUT Horizontal, 6 Mbps
15960.690	37.0	12.6	1.2	91.0	3.0	0.0	Vert	PK	0.0	49.6	74.0	-24.4	High Ch 64, EUT Horizontal, 6 Mbps
10640.680	43.6	-2.8	1.2	0.0	3.0	0.0	Horz	PK	0.0	40.8	68.2	-27.4	High Ch 64, EUT Horizontal, 6 Mbps
10639.450	43.0	-2.8	1.2	333.9	3.0	0.0	Vert	PK	0.0	40.2	68.2	-28.0	High Ch 64, EUT Horizontal, 6 Mbps
15780.560	26.5	12.1	1.2	274.9	3.0	0.0	Vert	AV	0.0	38.6	68.2	-29.6	Low Ch 52, EUT Horizontal, 36 Mbps
15780.660	26.5	12.1	1.2	4.9	3.0	0.0	Vert	AV	0.0	38.6	68.2	-29.6	Low Ch 52, EUT Horizontal, 54 Mbps
15780.190	26.5	12.1	1.2	132.0	3.0	0.0	Vert	AV	0.0	38.6	68.2	-29.6	Low Ch 52, EUT Horizontal, MCS0
15780.900	26.4	12.1	1.2	291.0	3.0	0.0	Vert	AV	0.0	38.5	68.2	-29.7	Low Ch 52, EUT Horizontal, MCS7
15778.780	26.4	12.1	1.2	147.9	3.0	0.0	Vert	AV	0.0	38.5	68.2	-29.7	Low Ch 52, EUT Horizontal, MCS8 (256-QAM)
10639.250	32.1	-2.8	1.2	0.0	3.0	0.0	Horz	AV	0.0	29.3	68.2	-38.9	High Ch 64, EUT Horizontal, 6 Mbps
10640.600	31.9	-2.8	1.2	333.9	3.0	0.0	Vert	AV	0.0	29.1	68.2	-39.1	High Ch 64, EUT Horizontal, 6 Mbps

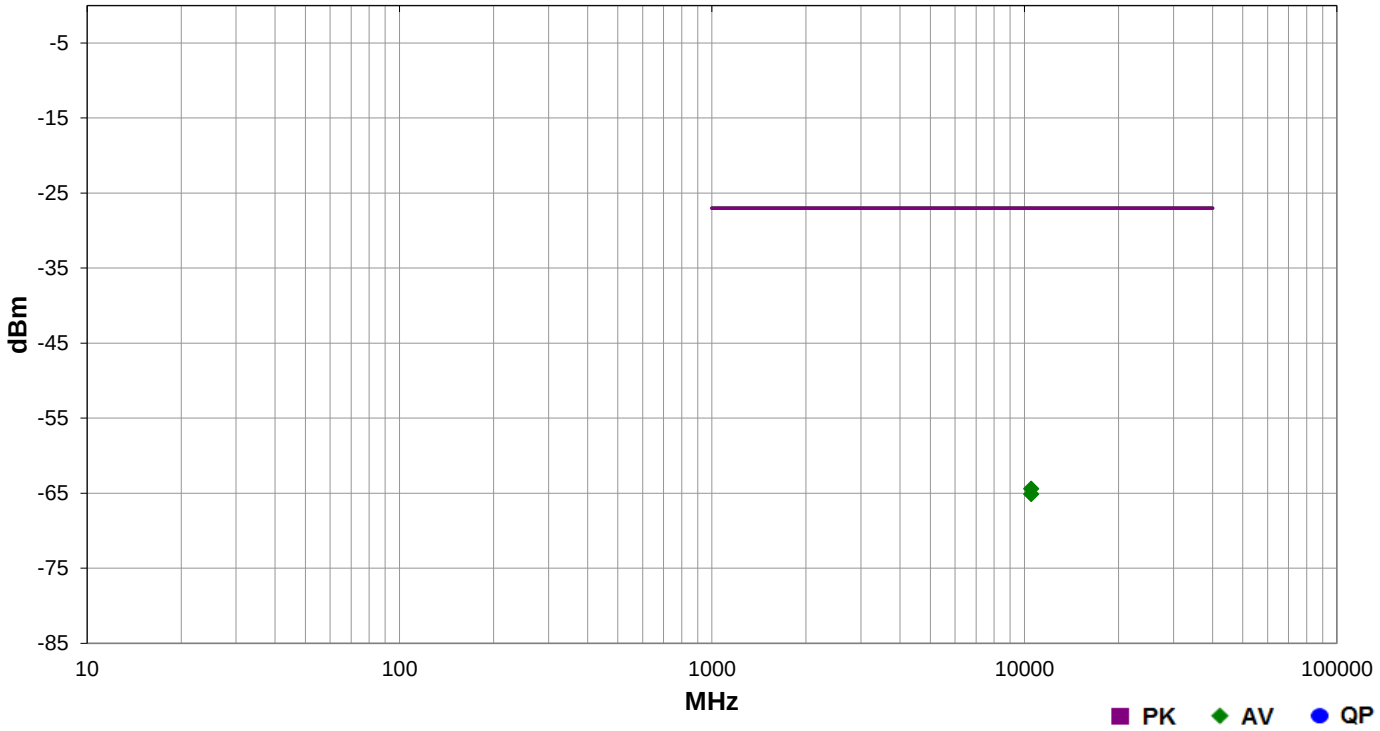
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.07.11 PSA-ESCI 2017.06.01

Work Order:	APPR0050	**Date:**	08/25/17		
Project:	None	**Temperature:**	24.3 °C		
Job Site:	TX02	**Humidity:**	50.9% RH		
Serial Number:	None	**Barometric Pres.:**	1017 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	1				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Low Ch 52 (5260MHz)				
Deviations:	None				
Comments:	-27dBm EIRP limit. Harmonics for 20 MHz channel bandwidths, 5.3GHz Band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	19	**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
	10519.530	2.1	7.0	Horz	AV	3.61E-10	-64.4	-27.0	-37.4	Low Ch 52, EUT Horizontal, 6 Mbps
	10520.390	1.2	225.0	Vert	AV	3.07E-10	-65.1	-27.0	-38.1	Low Ch 52, EUT Horizontal, 6 Mbps

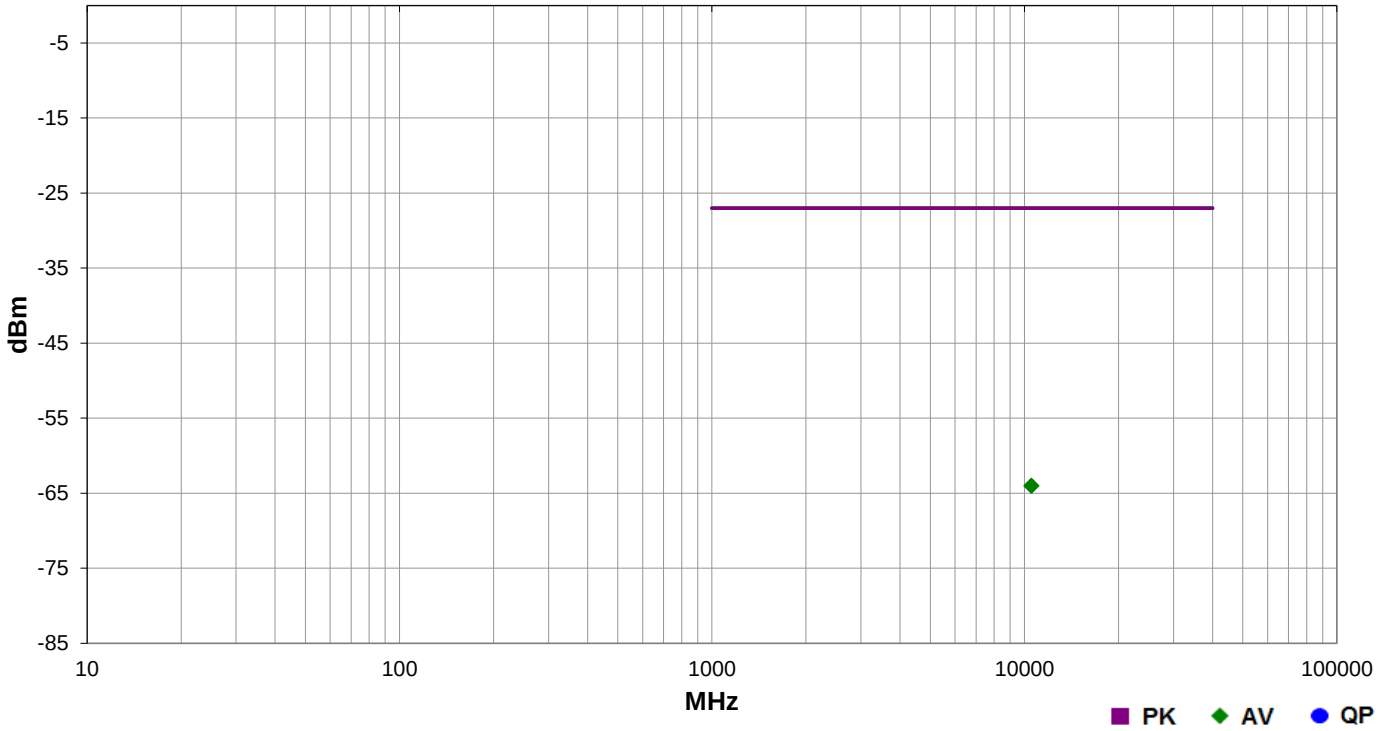
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.07.11 PSA-ESCI 2017.06.01

Work Order:	APPR0050	**Date:**	08/25/17		
Project:	None	**Temperature:**	24.3 °C		
Job Site:	TX02	**Humidity:**	50.9% RH		
Serial Number:	None	**Barometric Pres.:**	1017 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	1				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Low Ch 52/26 (5270MHz)				
Deviations:	None				
Comments:	-27dBm EIRP limit. Harmonics for 40 MHz channel bandwidths, 5.3GHz Band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	22	**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
	10539.970	1.2	1.0	Vert	AV	3.95E-10	-64.0	-27.0	-37.0	Low Ch 52/56, EUT Horizontal, MCS0

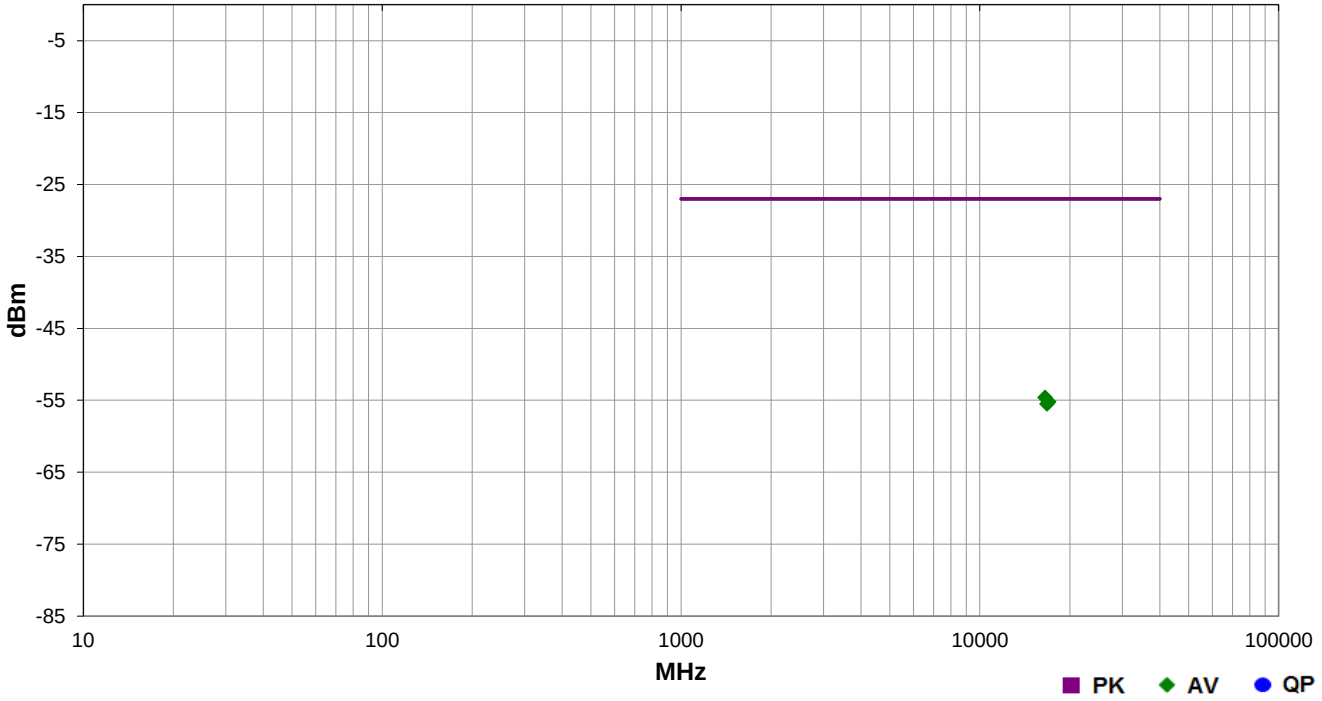
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.07.11 PSA-ESCI 2017.06.01

Work Order:	APPR0050	**Date:**	08/25/17	Jonathan Kiefer	
Project:	None	**Temperature:**	24.3 °C		
Job Site:	TX02	**Humidity:**	50.9% RH		
Serial Number:	None	**Barometric Pres.:**	1017 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	1				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Low Ch 100/104 (5510MHz), Mid Ch 116/120 (5590MHz), High Ch 132/136 (5670MHz)				
Deviations:	None				
Comments:	-27dBm EIRP limit. Harmonics for 40 MHz channel bandwidths, 5.6GHz Band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	23	**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
	16528.880	1.2	111.9	Vert	AV	3.44E-09	-54.6	-27.0	-27.6	Low Ch 100/104, EUT Horizontal, MCS0
	17010.890	1.2	256.9	Vert	AV	3.00E-09	-55.2	-27.0	-28.2	High Ch 132/136, EUT Horizontal, MCS0
	16770.940	1.2	15.9	Vert	AV	2.80E-09	-55.5	-27.0	-28.5	Mid Ch 116/120, EUT Horizontal, MCS0

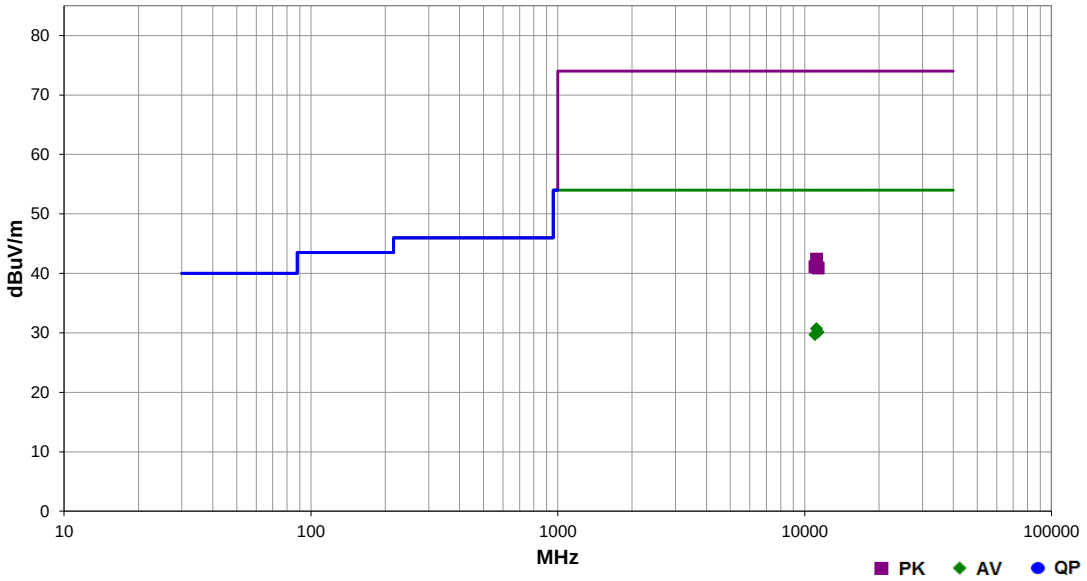
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.07.11 PSA-ESCI 2017.06.01

Work Order:	APPR0050	**Date:**	08/25/17	Jonathan Kiefer	
Project:	None	**Temperature:**	24.3 °C		
Job Site:	TX02	**Humidity:**	50.9% RH		
Serial Number:	None	**Barometric Pres.:**	1017 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	1				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Low Ch 100/104 (5510MHz), Mid Ch 116/120 (5590MHz), High Ch 132/136 (5670MHz)				
Deviations:	None				
Comments:	PK and AVG(RMS) data. Harmonics for 40 MHz channel bandwidths, 5.6GHz Band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	24	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



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
11179.140	33.2	-2.5	1.2	0.0	3.0	0.0	Vert	AV	0.0	30.7	54.0	-23.3	Mid Ch 116/120, EUT Horizontal, MCS0
11340.070	32.9	-2.8	1.2	331.0	3.0	0.0	Vert	AV	0.0	30.1	54.0	-23.9	High Ch 132/136, EUT Horizontal, MCS0
11019.970	32.3	-2.6	1.2	69.0	3.0	0.0	Vert	AV	0.0	29.7	54.0	-24.3	Low Ch 100/104, EUT Horizontal, MCS0
11179.540	44.9	-2.5	1.2	0.0	3.0	0.0	Vert	PK	0.0	42.4	74.0	-31.6	Mid Ch 116/120, EUT Horizontal, MCS0
11020.080	43.7	-2.6	1.2	69.0	3.0	0.0	Vert	PK	0.0	41.1	74.0	-32.9	Low Ch 100/104, EUT Horizontal, MCS0
11340.810	43.7	-2.8	1.2	331.0	3.0	0.0	Vert	PK	0.0	40.9	74.0	-33.1	High Ch 132/136, EUT Horizontal, MCS0

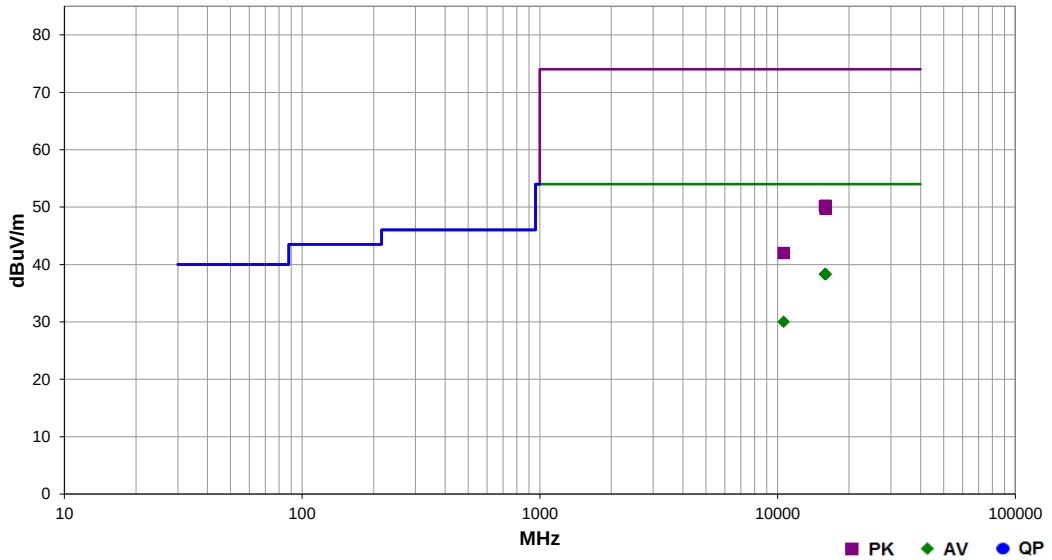
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.07.11 PSA-ESCI 2017.06.01

Work Order:	APPR0050	**Date:**	08/25/17		
Project:	None	**Temperature:**	24.3 °C		
Job Site:	TX02	**Humidity:**	50.9% RH		
Serial Number:	None	**Barometric Pres.:**	1017 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	1				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Low Ch 52/56 (5270MHz), High Ch 60/64 (5310MHz)				
Deviations:	None				
Comments:	PK and AVG(RMS) data. Harmonics for 40 MHz channel bandwidths, 5.3GHz Band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	25	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



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
15929.250	25.7	12.6	1.2	117.9	3.0	0.0	Vert	AV	0.0	38.3	54.0	-15.7	High Ch 60/64, EUT Horizontal, MCS0
15808.670	26.1	12.2	1.2	255.0	3.0	0.0	Vert	AV	0.0	38.3	54.0	-15.7	Low Ch 52/56, EUT Horizontal, MCS0
15930.230	25.7	12.6	1.2	122.0	3.0	0.0	Vert	AV	0.0	38.3	54.0	-15.7	High Ch 60/64, EUT Horizontal, MCS7
15930.350	25.7	12.6	1.2	106.9	3.0	0.0	Vert	AV	0.0	38.3	54.0	-15.7	High Ch 60/64, EUT Horizontal, MCS8 (256-QAM)
15810.460	38.0	12.2	1.2	255.0	3.0	0.0	Vert	PK	0.0	50.2	74.0	-23.8	Low Ch 52/56, EUT Horizontal, MCS0
15931.420	37.6	12.6	1.2	122.0	3.0	0.0	Vert	PK	0.0	50.2	74.0	-23.8	High Ch 60/64, EUT Horizontal, MCS7
15930.050	37.6	12.6	1.2	106.9	3.0	0.0	Vert	PK	0.0	50.2	74.0	-23.8	High Ch 60/64, EUT Horizontal, MCS8 (256-QAM)
10621.280	32.8	-2.8	1.2	256.9	3.0	0.0	Vert	AV	0.0	30.0	54.0	-24.0	High Ch 60/64, EUT Horizontal, MCS0
15929.020	37.1	12.6	1.2	117.9	3.0	0.0	Vert	PK	0.0	49.7	74.0	-24.3	High Ch 60/64, EUT Horizontal, MCS0
10619.790	44.8	-2.8	1.2	256.9	3.0	0.0	Vert	PK	0.0	42.0	74.0	-32.0	High Ch 60/64, EUT Horizontal, MCS0

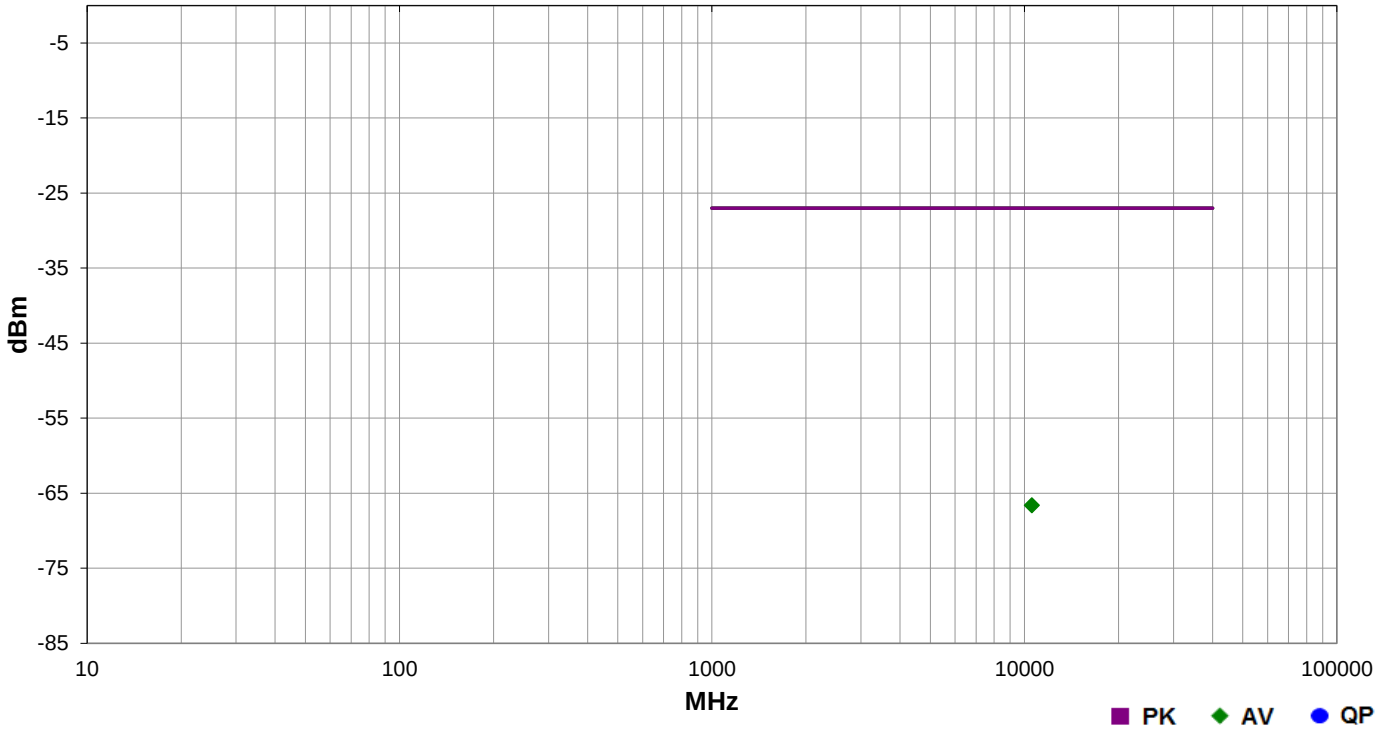
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.07.11 PSA-ESCI 2017.06.01

Work Order:	APPR0050	**Date:**	08/25/17		
Project:	None	**Temperature:**	24.3 °C		
Job Site:	TX02	**Humidity:**	50.9% RH		
Serial Number:	None	**Barometric Pres.:**	1017 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	1				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Low Ch 52-64 (5290MHz)				
Deviations:	None				
Comments:	-27dBm EIRP limit. Harmonics for 80 MHz channel bandwidths, 5.3GHz Band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	27	**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
	10578.640	1.2	187.0	Vert	AV	2.17E-10	-66.6	-27.0	-39.6	Low Ch 52-64, EUT Horizontal, MCS0

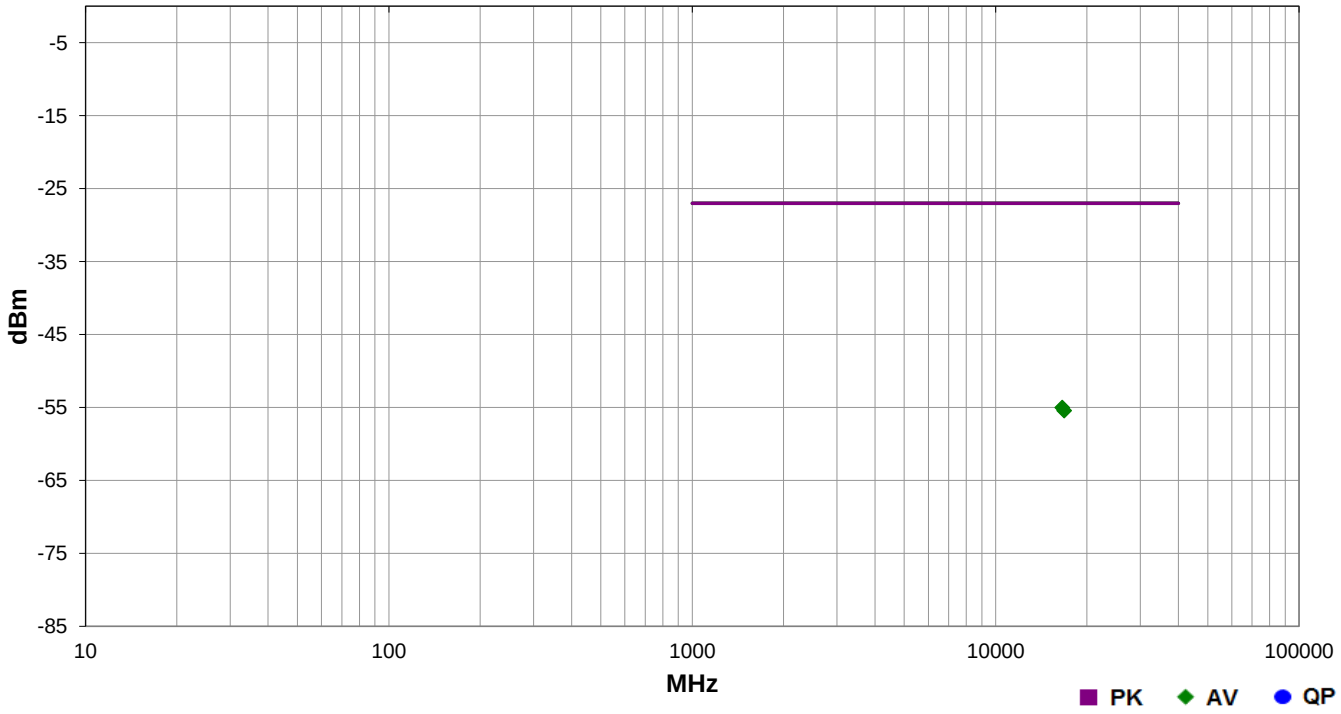
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.07.11 PSA-ESCI 2017.06.01

Work Order:	APPR0050	**Date:**	08/25/17	Jonathan Kiefer	
Project:	None	**Temperature:**	24.3 °C		
Job Site:	TX02	**Humidity:**	50.9% RH		
Serial Number:	None	**Barometric Pres.:**	1017 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	1				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Low Ch 100-112 (5530MHz), High Ch 116-128 (5610MHz)				
Deviations:	None				
Comments:	-27dBm EIRP limit. Harmonics for 80 MHz channel bandwidths, 5.6GHz Band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	28	**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
	16589.710	1.2	303.9	Vert	AV	3.14E-09	-55.0	-27.0	-28.0	Low Ch 100-112, EUT Horizontal, MCS0
	16828.980	1.2	294.0	Vert	AV	2.86E-09	-55.4	-27.0	-28.4	High Ch 116-128, EUT Horizontal, MCS0

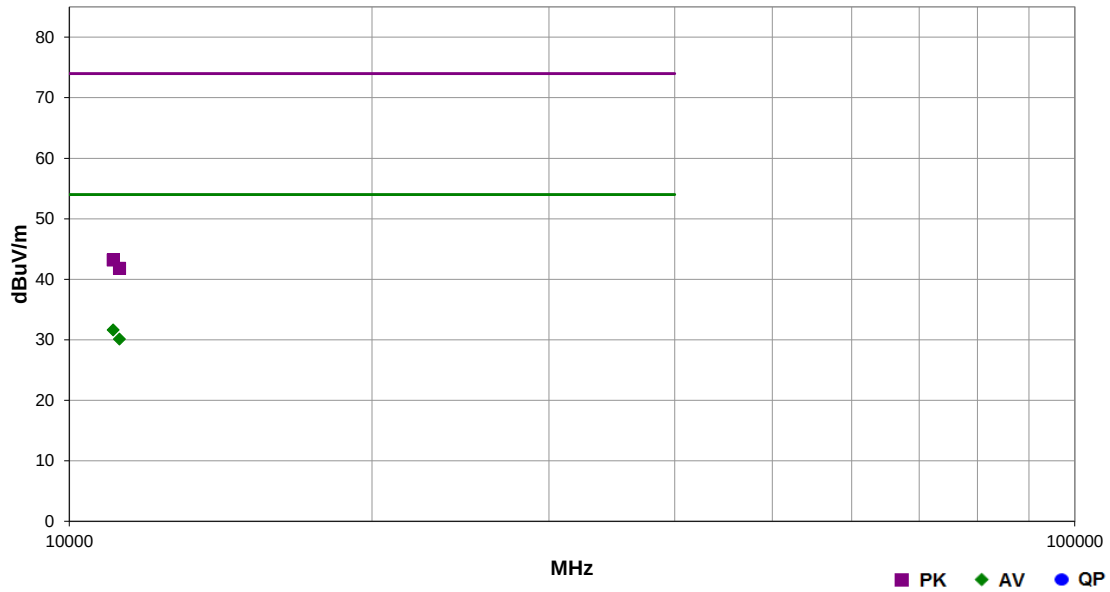
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.07.11 PSA-ESCI 2017.06.01

Work Order:	APPR0050	**Date:**	08/25/17	Jonathan Kiefer	
Project:	None	**Temperature:**	24.3 °C		
Job Site:	TX02	**Humidity:**	50.9% RH		
Serial Number:	None	**Barometric Pres.:**	1017 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	1				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Low Ch 100-112 (5530MHz), High Ch 116-128 (5610MHz)				
Deviations:	None				
Comments:	PK and AVG(RMS) data. Harmonics for 80 MHz channel bandwidths, 5.6GHz Band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	29	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



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
11060.220	34.1	-2.5	3.3	315.0	3.0	0.0	Vert	AV	0.0	31.6	54.0	-22.4	Low Ch 100-112, EUT Horizontal, MCS0
11218.910	32.7	-2.6	1.2	270.0	3.0	0.0	Vert	AV	0.0	30.1	54.0	-23.9	High Ch 116-128, EUT Horizontal, MCS0
11059.010	45.7	-2.5	3.3	315.0	3.0	0.0	Vert	PK	0.0	43.2	74.0	-30.8	Low Ch 100-112, EUT Horizontal, MCS0
11219.030	44.4	-2.6	1.2	270.0	3.0	0.0	Vert	PK	0.0	41.8	74.0	-32.2	High Ch 116-128, EUT Horizontal, MCS0

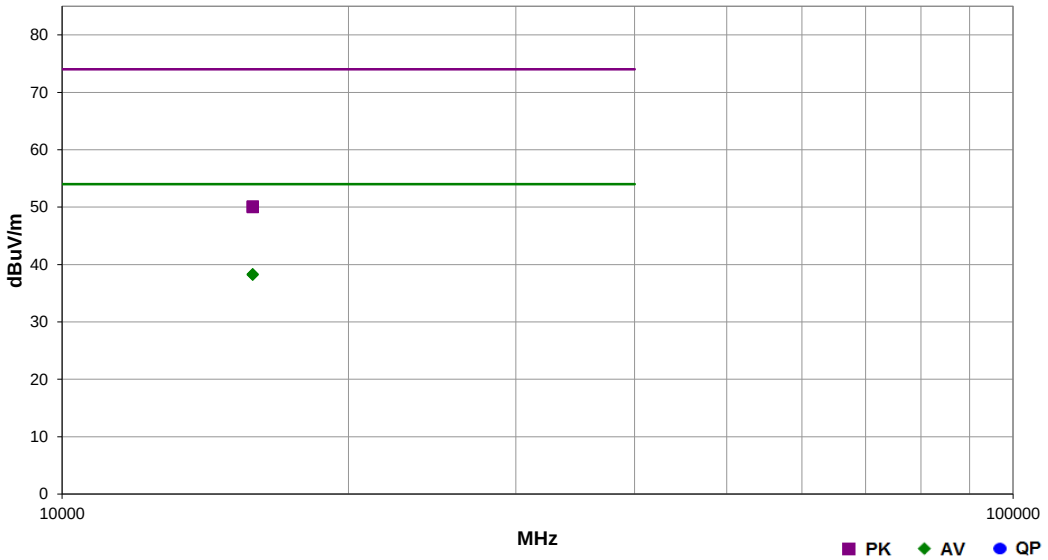
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.07.11 PSA-ESCI 2017.06.01

Work Order:	APPR0050	**Date:**	08/25/17	Jonathan Kiefer	
Project:	None	**Temperature:**	24.3 °C		
Job Site:	TX02	**Humidity:**	50.9% RH		
Serial Number:	None	**Barometric Pres.:**	1017 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	1				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Low Ch 52-64 (5290MHz)				
Deviations:	None				
Comments:	PK and AVG(RMS) data. Harmonics for 80 MHz channel bandwidths, 5.3GHz Band. See power table for output power settings used.				

Test Specifications	Test Method
FCC 15.407:2017	ANSI C63.10:2013

Run #	31	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass



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
15869.400	25.9	12.4	1.0	87.9	3.0	0.0	Vert	AV	0.0	38.3	54.0	-15.7	Low Ch 52-64, EUT Horizontal, MCS0
15868.690	25.8	12.4	1.2	303.9	3.0	0.0	Vert	AV	0.0	38.2	54.0	-15.8	Low Ch 52-64, EUT Horizontal, MCS9 (256-QAM)
15868.590	37.7	12.4	1.2	303.9	3.0	0.0	Vert	PK	0.0	50.1	74.0	-23.9	Low Ch 52-64, EUT Horizontal, MCS9 (256-QAM)
15869.210	37.6	12.4	1.0	87.9	3.0	0.0	Vert	PK	0.0	50.0	74.0	-24.0	Low Ch 52-64, EUT Horizontal, MCS0

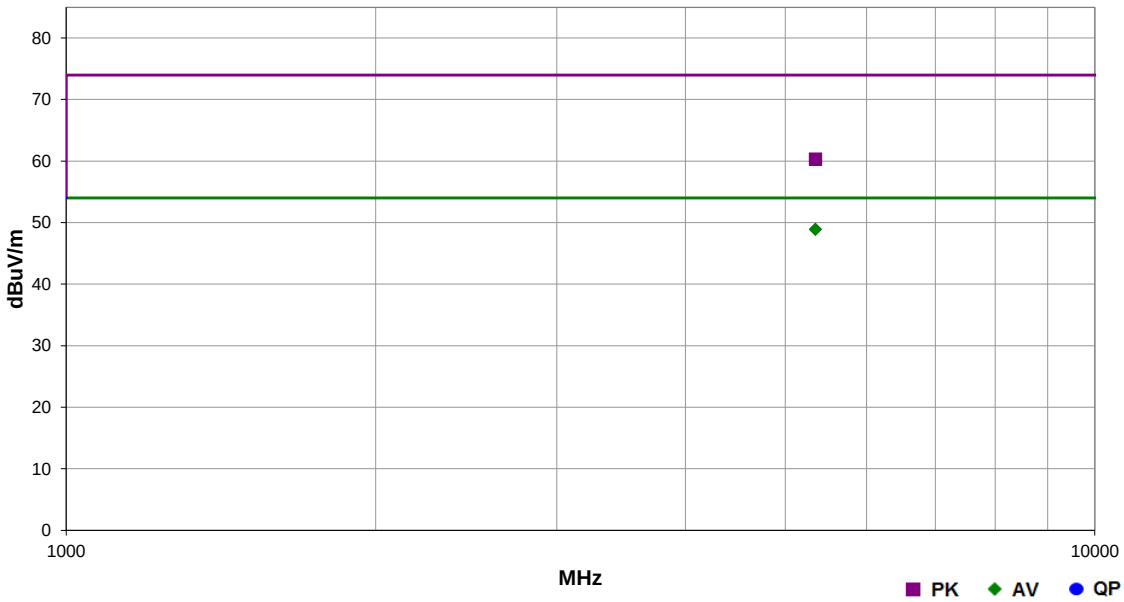
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.07.11 PSA-ESCI 2017.06.01

Work Order:	APPR0050	**Date:**	08/25/17	Jonathan Kiefer	
Project:	None	**Temperature:**	23.1 °C		
Job Site:	TX02	**Humidity:**	56.3% RH		
Serial Number:	None	**Barometric Pres.:**	1018 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	1				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at High Ch 64 (5320MHz)				
Deviations:	None				
Comments:	PK and AVG(RMS) data. Transmit Band Edge for 20 MHz channel bandwidths, 5.3GHz Band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	49	**Test Distance (m)**	1	**Antenna Height(s)**	1.6(m)	**Results**	Pass



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
5350.327	23.8	34.6	1.6	232.9	1.0	0.0	Horz	AV	-9.5	48.9	54.0	-5.1	High Ch 64, EUT Horizontal, MCS7
5351.253	35.2	34.6	1.6	232.9	1.0	0.0	Horz	PK	-9.5	60.3	74.0	-13.7	High Ch 64, EUT Horizontal, MCS7

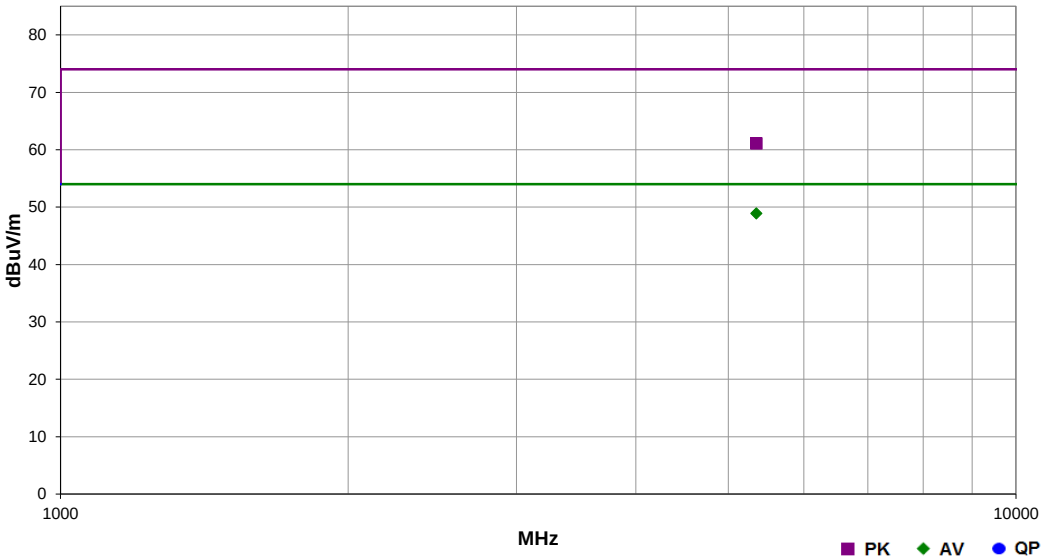
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.07.11 PSA-ESCI 2017.06.01

Work Order:	APPR0050	**Date:**	08/25/17	Jonathan Kiefer	
Project:	None	**Temperature:**	23.1 °C		
Job Site:	TX02	**Humidity:**	56.3% RH		
Serial Number:	None	**Barometric Pres.:**	1018 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	1				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at High Ch 60/64 (5310MHz)				
Deviations:	None				
Comments:	PK and AVG(RMS) data. Transmit Band Edge for 40 MHz channel bandwidths, 5.3GHz band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	50	**Test Distance (m)**	1	**Antenna Height(s)**	1.6(m)	**Results**	Pass



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
5350.663	23.8	34.6	1.6	199.0	1.0	0.0	Horz	AV	-9.5	48.9	54.0	-5.1	High Ch 60/64, EUT Horizontal, MCS9 (256-QAM)
5351.303	36.0	34.6	1.6	199.0	1.0	0.0	Horz	PK	-9.5	61.1	74.0	-12.9	High Ch 60/64, EUT Horizontal, MCS9 (256-QAM)

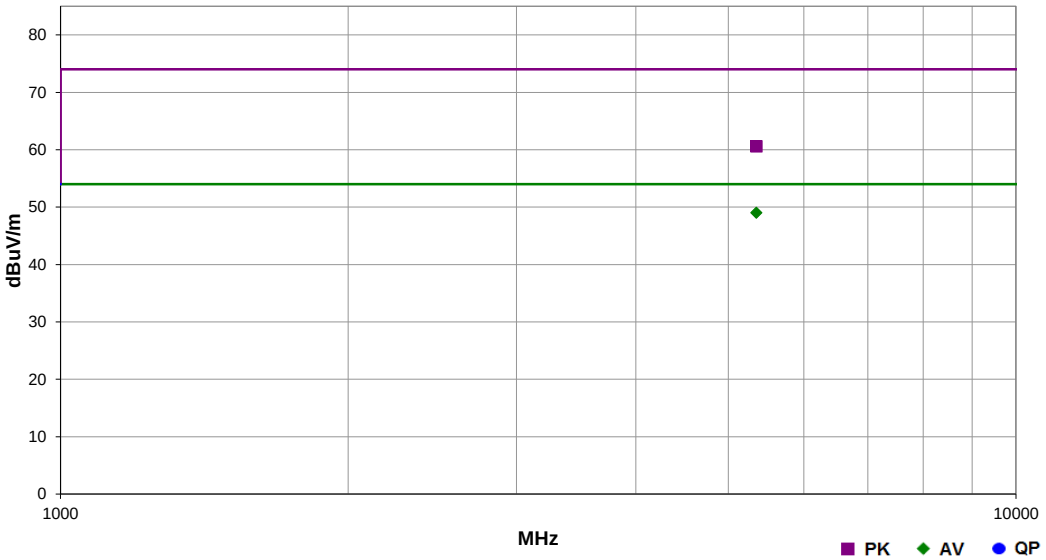
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.07.11 PSA-ESCI 2017.06.01

Work Order:	APPR0050	**Date:**	08/25/17	Jonathan Kiefer	
Project:	None	**Temperature:**	23.1 °C		
Job Site:	TX02	**Humidity:**	56.3% RH		
Serial Number:	None	**Barometric Pres.:**	1018 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	1				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Low Ch 52-64 (5290MHz)				
Deviations:	None				
Comments:	PK and AVG(RMS) data. Transmit Band Edge for 80 MHz channel bandwidths, 5.3GHz band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	51	**Test Distance (m)**	1	**Antenna Height(s)**	1.6(m)	**Results**	Pass



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
5351.257	23.9	34.6	1.6	123.0	1.0	0.0	Horz	AV	-9.5	49.0	54.0	-5.0	Low Ch 52-64, EUT Horizontal, MCS9 (256-QAM)
5351.463	35.5	34.6	1.6	123.0	1.0	0.0	Horz	PK	-9.5	60.6	74.0	-13.4	Low Ch 52-64, EUT Horizontal, MCS9 (256-QAM)

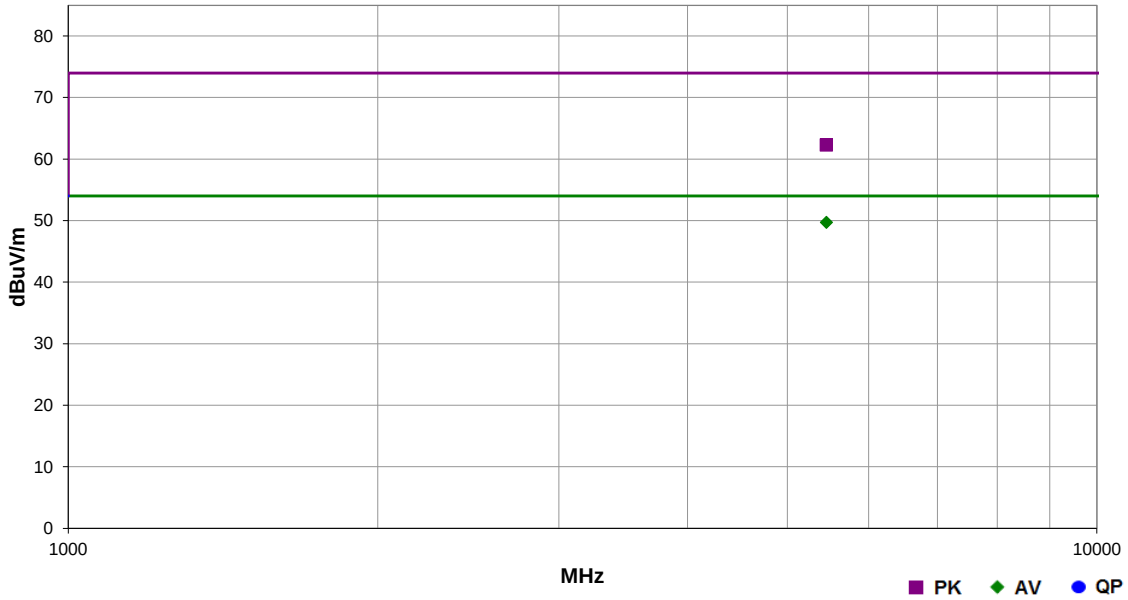
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.07.11 PSA-ESCI 2017.06.01

Work Order:	APPR0050	**Date:**	08/25/17	Jonathan Kiefer	
Project:	None	**Temperature:**	23.1 °C		
Job Site:	TX02	**Humidity:**	56.3% RH		
Serial Number:	None	**Barometric Pres.:**	1018 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	1				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Low Ch 100 (5500MHz)				
Deviations:	None				
Comments:	PK and AVG(RMS) data. Transmit Band Edge for 20 MHz channel bandwidths, 5.6GHz band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	52	**Test Distance (m)**	1	**Antenna Height(s)**	1.6(m)	**Results**	Pass



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
5459.890	24.2	35.0	1.6	2.0	1.0	0.0	Horz	AV	-9.5	49.7	54.0	-4.3	Low Ch 100, EUT Horizontal, MCS7
5458.103	36.8	35.0	1.6	2.0	1.0	0.0	Horz	PK	-9.5	62.3	74.0	-11.7	Low Ch 100, EUT Horizontal, MCS7

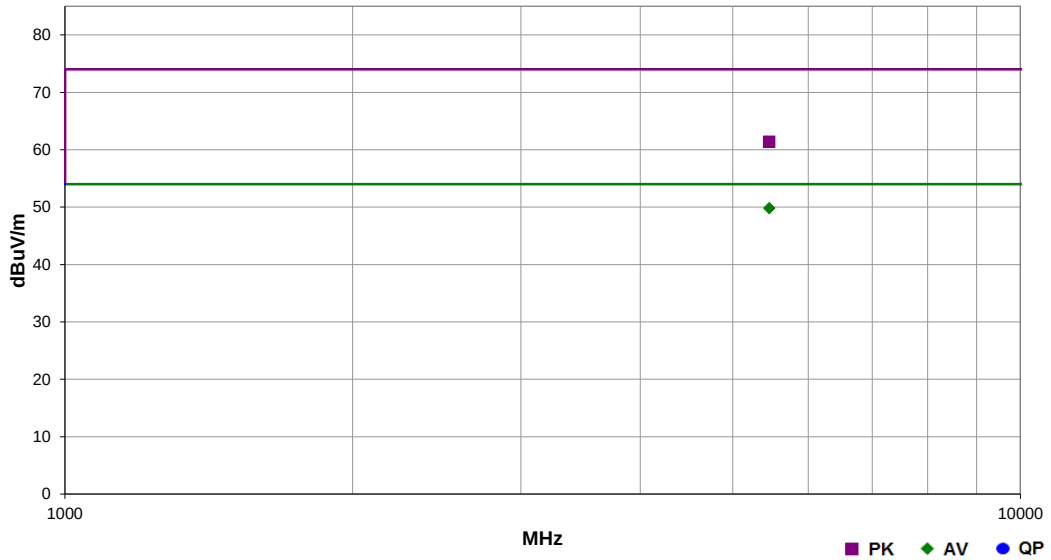
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.07.11 PSA-ESCI 2017.06.01

Work Order:	APPR0050	**Date:**	08/25/17	Jonathan Kiefer	
Project:	None	**Temperature:**	23.1 °C		
Job Site:	TX02	**Humidity:**	56.3% RH		
Serial Number:	None	**Barometric Pres.:**	1018 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	1				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Low Ch 100/104 (5510MHz)				
Deviations:	None				
Comments:	PK and AVG(RMS) data. Transmit Band edge for 40 MHz channel bandwidths, 5.6GHz Band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	53	**Test Distance (m)**	1	**Antenna Height(s)**	1.6(m)	**Results**	Pass



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
5459.960	24.3	35.0	1.6	296.0	1.0	0.0	Horz	AV	-9.5	49.8	54.0	-4.2	Low Ch 100/104, EUT Horizontal, MCS9 (256-QAM)
5458.783	35.9	35.0	1.6	296.0	1.0	0.0	Horz	PK	-9.5	61.4	74.0	-12.6	Low Ch 100/104, EUT Horizontal, MCS9 (256-QAM)

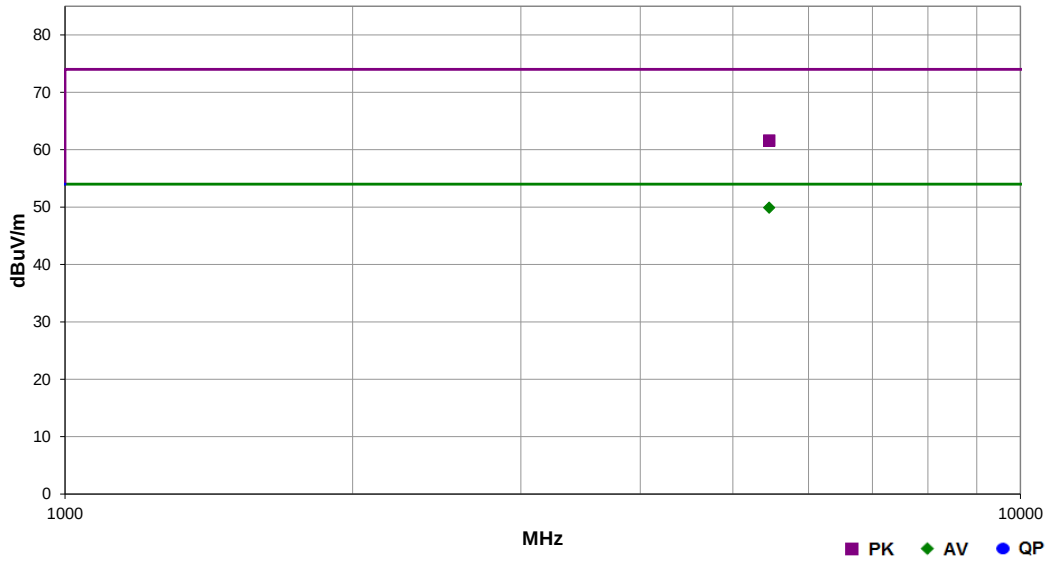
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.07.11 PSA-ESCI 2017.06.01

Work Order:	APPR0050	**Date:**	08/25/17	Jonathan Kiefer	
Project:	None	**Temperature:**	23.1 °C		
Job Site:	TX02	**Humidity:**	56.3% RH		
Serial Number:	None	**Barometric Pres.:**	1018 mbar	**Tested by:**	Jonathan Kiefer
EUT:	Dual Band Wireless-AC 3160 Module				
Configuration:	1				
Customer:	American Portwell Technology Inc.				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Continuously at Low Ch 100-112 (5530MHz)				
Deviations:	None				
Comments:	PK and AVG(RMS) data. Transmit Band Edge for 80 MHz channel bandwidths, 5.6GHz Band. See power table for output power settings used.				

Test Specifications	**Test Method**
FCC 15.407:2017	ANSI C63.10:2013

Run #	54	**Test Distance (m)**	1	**Antenna Height(s)**	1.6(m)	**Results**	Pass



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
5458.493	24.4	35.0	1.6	343.0	1.0	0.0	Horz	AV	-9.5	49.9	54.0	-4.1	Low Ch 100-112, EUT Horizontal, MCS9 (256-QAM)
5458.250	36.1	35.0	1.6	343.0	1.0	0.0	Horz	PK	-9.5	61.6	74.0	-12.4	Low Ch 100-112, EUT Horizontal, MCS9 (256-QAM)