FCC Test Report

Product Name	G.hn Powerline Wireless Extender
Model No	PWS-8121, PWS-8131
FCC ID	YG7-PWS812131

Applicant	Zinwell Corporation	
Address	7F., No.512, Yuanshan Rd., Zhonghe Dist.,	
	New Taipei City 235, Taiwan (R.O.C.)	

Date of Receipt	Jun. 21, 2017
Issued Date	Jul. 25, 2017
Report No.	1760527R-RFUSP63V00
Report Version	V1.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF or any agency of the government.

The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.



Test Report

Issued Date: Jul. 25, 2017 Report No.: 1760527R-RFUSP63V00



Product Name	G.hn Powerline Wireless Extender	
Applicant	Zinwell Corporation	
A ddroco	7F., No.512, Yuanshan Rd., Zhonghe Dist., New Taipei City 235, Taiwar	
Address	(R.O.C.)	
Manufacturer	Zinwell Corporation	
Model No.	PWS-8121, PWS-8131	
FCC ID.	YG7-PWS812131	
EUT Rated Voltage	AC 100-240V, 50/60Hz	
EUT Test Voltage	AC 120V/60Hz	
Trade Name	ZINWELL	
Applicable Standard	FCC CFR Title 47 Part 15 Subpart E: 2016	
	ANSI C63.4: 2014, ANSI C63.10: 2013	
	789033 D02 General UNII Test Procedures New Rules v01r04	
Test Result	lt Complied	

Documented By :

:

Jinn Chen

(Senior Adm. Specialist / Jinn Chen)

Tested By

lova chu

(Engineer / Nova Chu)

Approved By :

(Director / Vincent Lin)



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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	G.hn Powerline Wireless Extender	
Trade Name	ZINWELL	
FCC ID.	YG7-PWS812131	
Model No.	PWS-8121, PWS-8131	
Frequency Range	802.11a/n-20MHz: 5180-5240MHz, 5745-5825MHz	
	802.11n-40MHz: 5190-5230, 5755-5795MHz	
	802.11ac-80MHz: 5210MHz, 5775MHz	
Number of Channels	802.11a/n-20MHz: 7; 802.11n-40MHz: 4; 802.11ac-80MHz: 2	
Data Rate	802.11a: 6 - 54Mbps	
	802.11n: up to 300Mbps	
	802.11ac-80MHz: up to 866.7MHz	
Channel Control	Auto	
Type of Modulation	a 802.11a/n:OFDM, BPSK, QPSK, 16QAM, 64QAM, 256QAM	
Antenna type	Printed on PCB Antenna	
Antenna Gain	Refer to the table "Antenna List"	

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	ZINWELL	PWS-8131	PCB Antenna	3.66dBi For 5GHz

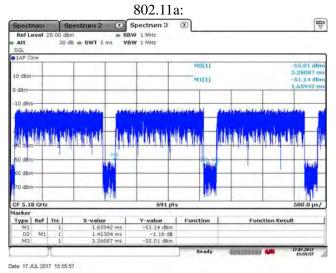
Note: The antenna of EUT is conform to FCC 15.203



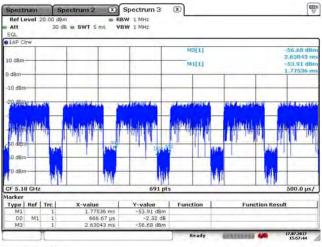
Duty Cycle:

802.11a	0.882
802.11n-20	0.876
802.11n-40	0.780
802.11ac-80	0.644

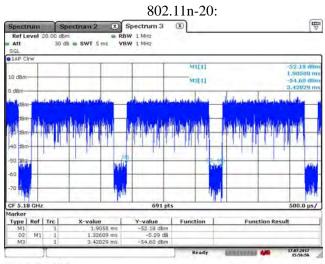
*Duty cycle = Ton / (Ton + Toff)



802.11n-40:

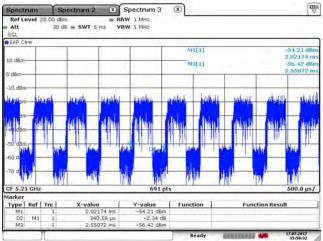


Date 17 JUL 2017 15:57 44



Date 17 JUL 2017 15 56 57

802.11ac-80:



Date 17 JUL 2017 15 58:32

802.11a/n-20MHz Center Working Frequency of Each Channel:

Channel Channel Frequency Channel Frequency Channel Frequency Frequency Channel 36: 5180 MHz Channel 40: 5200 MHz Channel 44: 5220 MHz Channel 48: 5240 MHz Channel 149: 5745 MHz Channel 153: 5765 MHz Channel 157: 5785 MHz Channel 161: 5805 MHz Channel 165: 5825 MHz

802.11n-40MHz Center Working Frequency of Each Channel:

ChannelFrequencyChannelFrequencyChannelFrequencyChannelChannel 38:5190 MHzChannel 46:5230 MHzChannel 151:5755 MHzChannel 159:5795 MHz

802.11ac-80MHz Center Working Frequency of Each Channel:

ChannelFrequencyChannelFrequencyChannelFrequencyChannel 42:5210 MHzChannel 155:5775 MHzFrequencyFrequency

- 1. This device is a Ghn Powerline Wireless Extender with a built-in 802.11a/b/g/n/ac WLAN transceiver.
- 2. The EUT is including two models, PWS-8131 with outlet, PWS-8121 without outlet, all models are the same electrical.
- 3. Each model through the pretest, only the worst case PWS-8131 is shown in the test report.
- 4. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
- 5. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report. (802.11a is 6Mbps \$ 802.11n-20BW is 14.4Mbps \$ 802.11n-40BW is 30Mbps and 802.11ac(80M-BW) is 65 Mbps)
- 6. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart E for Unlicensed National Information Infrastructure devices.
- 7. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

Test Mode	Mode 1: Transmit (802.11a-6Mbps)
	Mode 2: Transmit (802.11n-20BW 14.4Mbps)
	Mode 3: Transmit (802.11n-40BW 30Mbps)
	Mode 4 Transmit (802.11ac-80BW-65Mbps)

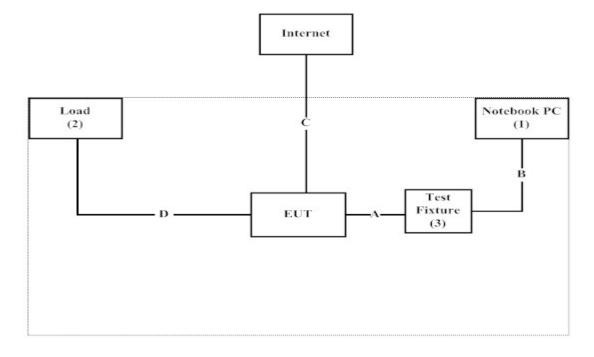
1.3. Tested System Datails

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

	Product	Manufacturer	Model No.	Serial No.	Power Cord
(1)	Notebook PC	DELL	P62G	416FJC2	Non-Shielded, 1.8m
(2)	Load	N/A	N/A	N/A	N/A
(3)	Test Fixture	ZINWELL	N/A	N/A	N/A

Signal Cable Type		Signal cable Description
А	Single Cable	Shielded, 1.0m
В	USB Cable	Shielded, 0.25m
С	LAN Cable	Non-Shielded, 2m
D	Power Cable	Non-Shielded, 1.7m

1.4. Configuration of tested System



1.5. EUT Exercise Software

- (1) Setup the EUT as shown on 1.4
- (2) Execute "Putty V0.63.0.0" program on the EUT.
- (3) Configure the test mode, the test channel, and the data rate.
- (4) Start the continuous transmission.
- (5) Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded from DEKRA Testing and Certification Co., Ltd. Web Site:

http://www.dekra.com.tw/english/about/certificates.aspx?bval=5

The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site: <u>http://www.dekra.com.tw/index_en</u>

Site Description:	Accredited by TAF
	Accredited Number: 3023
Site Name:	DEKRA Testing and Certification Co., Ltd.
Site Address:	No.159, Sec. 2, Wenhua 1st Rd., Linkou Dist.,
	New Taipei City 24457, Taiwan.
	TEL: 886-2-2602-7968 / FAX : 866-2-2602-3286
	E-Mail : info.tw@dekra.com

FCC Accreditation Number: TW1014

1.7. List of Test Equipment

For Conduction measurements /ASR1

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
Х	EMI Test Receiver	R&S	ESR7	161601	2017.01.06	2018.01.05
Х	Two-Line V-Network	R&S	ENV216	101306	2017.02.16	2018.02.15
Х	Two-Line V-Network	R&S	ENV216	101307	2017.03.17	2018.03.16
Х	Coaxial Cable	Quietek	RG400_BNC	RF001	2017.05.24	2018.05.23

Note:

- 1. All equipments are calibrated every one year.
- 2. The test instruments marked with "X" are used to measure the final test results.

3. Test Software version : QuieTek EMI 2.0 V2.1.113

For Conducted measurements /ASR3

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
Х	Temperature Chamber	KSON	THS-D4T-100	A0606	2017.03.31	2018.03.30
Х	Spectrum Analyzer	R&S	FSV40	101149	2016.12.14	2017.12.13
Х	Power Meter	Anritsu	ML2496A	1548003	2016.12.15	2017.12.14
Х	Power Sensor	Anritsu	MA2411B	1531024	2016.12.15	2017.12.14
Х	Power Sensor	Anritsu	MA2411B	1531025	2016.12.15	2017.12.14

Note:

1. All equipments are calibrated every one year.

2. The test instruments marked with "X" are used to measure the final test results.

3. Test Software version : QuieTek Conduction Test System V8.0.110

For Radiated measurements /ACB1

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
Х	Loop Antenna	TESEQ	HLA6121	37133	2016.03.18	2018.03.17
Х	Bi-Log Antenna	SCHWARZBECK	VULB9168	9168-674	2017.02.09	2018.02.08
Х	Horn Antenna	ETS-Lindgren	3117	00203800	2016.10.13	2017.10.12
Х	Horn Antenna	Com-Power	AH-840	101087	2017.05.24	2018.05.23
Х	Pre-Amplifier	EMCI	EMC001330	980316	2017.05.14	2018.05.13
Х	Pre-Amplifier	EMCI	EMC051835SE	980311	2017.05.15	2018.05.14
Х	Pre-Amplifier	EMCI	EMC05820SE	980310	2017.05.15	2018.05.14
Х	Pre-Amplifier	EMCI	EMC184045SE	980314	2017.05.17	2018.05.16
	Filter	MICRO TRONICS	BRM50702	G251	2016.08.11	2017.08.10
Х	Filter	MICRO TRONICS	BRM50716	G188	2016.08.11	2017.08.10
Х	EMI Test Receiver	R&S	ESR7	101602	2016.12.15	2017.12.14
Х	Spectrum Analyzer	R&S	FSV40	101149	2017.01.24	2018.01.23
Х	Coaxial Cable	SUHNER	SUCOFLEX 106	RF002	2017.05.25	2018.05.24
Х	Mircoflex Cable	HUBER SUHNER	SUCOFLEX 102	MY3381/2	2016.08.11	2017.08.10

Note:

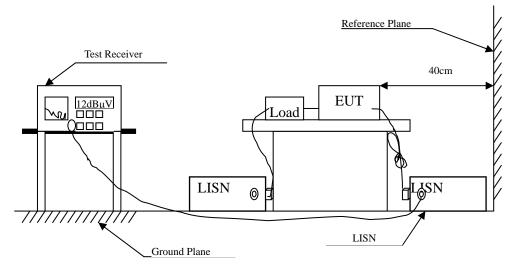
1. All equipments are calibrated every one year.

2. The test instruments marked with "X" are used to measure the final test results.

3. Test Software version : QuieTek EMI 2.0 V2.1.113

2. Conducted Emission

2.1. Test Setup



2.2. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBµV) Limit						
Frequency Limits						
MHz	QP	AV				
0.15 - 0.50	66-56	56-46				
0.50-5.0	56	46				
5.0 - 30	60	50				

Remarks : In the above table, the tighter limit applies at the band edges.

2.3. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4:2014 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

The EUT was setup to ANSI C63.4, 2014; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

2.4. Uncertainty

± 2.35 dB

2.5. Test Result of Conducted Emission

Product	:	G.hn Powerline Wireless Extender
Test Item	:	Conducted Emission Test
Power Line	:	Line 1
Test Date	:	2017/07/21
Test Mode	:	Mode 4 Transmit (802.11ac-80BW-65Mbps) (5210MHz)

Frequency	Correct	Reading	Reading Measurement		Limit
	Factor	Level	Level		
MHz	dB	dBµV	dBµV	dB	dBµV
LINE 1					
Quasi-Peak					
0.310	9.702	10.889	20.590	-40.839	61.429
0.520	9.740	18.802	28.541	-27.459	56.000
0.880	9.750	17.873	27.623	-28.377	56.000
3.200	9.842	16.774	26.616	-29.384	56.000
6.800	9.942	7.253	17.195	-42.805	60.000
15.520	10.084	33.436	43.520	-16.480	60.000
Average					
0.310	9.702	4.884	14.585	-36.844	51.429
0.520	9.740	10.265	20.005	-25.995	46.000
0.880	9.750	8.235	17.985	-28.015	46.000
3.200	9.842	9.554	19.396	-26.604	46.000
6.800	9.942	3.218	13.160	-36.840	50.000
15.520	10.084	31.687	41.771	-8.229	50.000

- 1. All Reading Levels are Quasi-Peak and average value.
- 2. "means the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor



Product	:	G.hn Powerline Wireless Extender
Test Item	:	Conducted Emission Test
Power Line	:	Line 2
Test Date	:	2017/07/21
Test Mode	:	Mode 4 Transmit (802.11ac-80BW-65Mbps) (5210MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	dBµV	dB	dBµV
LINE 2					
Quasi-Peak					
0.249	9.693	11.656	21.349	-41.822	63.171
0.460	9.722	25.089	34.811	-22.332	57.143
0.850	9.750	16.949	26.699	-29.301	56.000
2.600	9.808	17.082	26.890	-29.110	56.000
4.200	9.881	12.699	22.581	-33.419	56.000
6.400	9.918	14.719	24.637	-35.363	60.000
Average					
0.249	9.693	2.033	11.726	-41.445	53.171
0.460	9.722	15.700	25.422	-21.721	47.143
0.850	9.750	6.718	16.468	-29.532	46.000
2.600	9.808	9.404	19.212	-26.788	46.000
4.200	9.881	5.593	15.474	-30.526	46.000
6.400	9.918	12.950	22.868	-27.132	50.000

- 1. All Reading Levels are Quasi-Peak and average value.
- 2. "means the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor



Product	:	G.hn Powerline Wireless Extender
Test Item	:	Conducted Emission Test
Power Line	:	Line 1
Test Date	:	2017/07/21
Test Mode	:	Mode 4 Transmit (802.11ac-80BW-65Mbps) (5775MHz)

Frequency	Correct	ct Reading Measurement		Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	dBµV	dB	dBµV
LINE 1					
Quasi-Peak					
0.281	9.698	13.613	23.312	-38.945	62.257
0.840	9.750	17.904	27.654	-28.346	56.000
1.900	9.783	19.439	29.222	-26.778	56.000
3.600	9.852	17.163	27.016	-28.984	56.000
8.800	9.961	16.730	26.692	-33.308	60.000
23.000	10.159	15.223	25.382	-34.618	60.000
Average					
0.281	9.698	5.509	15.207	-37.050	52.257
0.840	9.750	13.626	23.376	-22.624	46.000
1.900	9.783	10.198	19.981	-26.019	46.000
3.600	9.852	10.240	20.093	-25.907	46.000
8.800	9.961	10.297	20.259	-29.741	50.000
23.000	10.159	11.108	21.267	-28.733	50.000

- 1. All Reading Levels are Quasi-Peak and average value.
- 2. "means the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor



Product	:	G.hn Powerline Wireless Extender
Test Item	:	Conducted Emission Test
Power Line	:	Line 2
Test Date	:	2017/07/21
Test Mode	:	Mode 4 Transmit (802.11ac-80BW-65Mbps) (5775MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	dBµV	dB	dBµV
LINE 2					
Quasi-Peak					
0.185	9.695	23.149	32.844	-32.156	65.000
0.340	9.701	7.689	17.390	-43.181	60.571
0.770	9.755	15.707	25.462	-30.538	56.000
2.600	9.808	16.705	26.512	-29.488	56.000
6.200	9.922	13.831	23.754	-36.246	60.000
24.000	10.212	12.419	22.631	-37.369	60.000
Average					
0.185	9.695	10.647	20.343	-34.657	55.000
0.340	9.701	1.286	10.987	-39.584	50.571
0.770	9.755	7.130	16.885	-29.115	46.000
2.600	9.808	9.058	18.865	-27.135	46.000
6.200	9.922	11.584	21.507	-28.493	50.000
24.000	10.212	7.194	17.406	-32.594	50.000

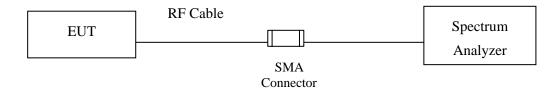
- 1. All Reading Levels are Quasi-Peak and average value.
- 2. "means the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor



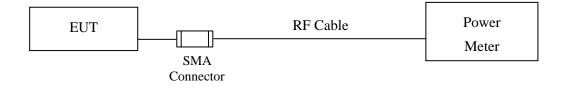
3. Maximun conducted output power

3.1. Test Setup

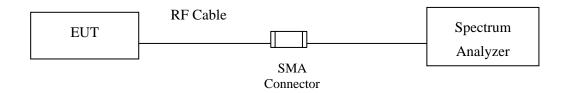
99% Occupied Bandwidth



Conduction Power Measurement (for 802.11an)



Conduction Power Measurement (for 802.11ac)



3.2. Limits

3.2.1. For the band 5.15-5.25 GHz,

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-topoint U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

- 3.2.2. For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm 10 log B, where B is the 26 dB emission bandwidth in megahertz. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
- 3.2.3. For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point UNII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any



corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

3.3. Test Procedure

As an alternative to FCC KDB-789033, the EUT maximum conducted output power was measured with an average power meter employing a video bandwidth greater the 6dB BW of the emission under test. Maximum conducted output power was read directly from the meter across all data rates, and across three channels within each sub-band. Special care was used to make sure that the EUT was transmitting in continuous mode. This method exceeds the limitations of FCC KDB-789033, and provides more accurate measurements.

802.11an (BW \leq 40MHz) Maximum conducted output power using KDB 789033 section E)3)b) Method PM-G (Measurement using a gated RF average power meter) <u>Note: the power meter have a video bandwidth that is greater than or equal to the measurement</u> <u>bandwidth, (Anritsu/MA2411B video bandwidth: 65MHz)</u>

802.11ac (BW=80MHz) Maximum conducted output power using KDB 789033 section E)2)d) Method SA-2 (trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

When transmitted signals consist of two or more non-contiguous spectrum segments (e.g., 80+80 MHz mode) or when a single spectrum segment of a transmission crosses the boundary between two adjacent U-NII bands, KDB 644545 D03 section D) procedure is used for measurements.

3.4. Uncertainty

Power Meter: ±0.95dB Spectrum Analyzer: ±1.30dB

3.5. Test Result of Maximum conducted output power

Product	:	G.hn Powerline Wireless Extender
Test Item	:	Maximum conducted output power
Test Site	:	No.3 OATS
Test Date	:	2017/07/20
Test Mode	:	Mode 1: Transmit (802.11a-6Mbps)

CHAIN A

Cab	Cable loss=1dB		Maximum conducted output power							
		Data Rate (Mbps)								
Channel No.	Frequency (MHz)	6	9	12	18	24	36	48	54	
			Measurement Level (dBm)							
36	5180	18.87								
44	5220	18.93	18.34	18.29	18.24	18.19	18.13	18.09	18.03	
48	5240	18.83								
149	5745	19.02								
157	5785	18.94	18.35	18.3	18.27	18.23	18.19	18.14	18.08	
165	5825	19.05								

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

CHAIN B

Cab	Cable loss=1dB		Maximum conducted output power							
		Data Rate (Mbps)								
Channel No.	Frequency (MHz)	6	9	12	18	24	36	48	54	
			Measurement Level (dBm)							
36	5180	18.97								
44	5220	18.89	18.29	18.23	18.19	18.13	18.08	18.03	17.98	
48	5240	19.03								
149	5745	19.05								
157	5785	19.03	18.43	18.38	18.32	18.27	18.23	18.18	18.15	
165	5825	19.01								

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss



Maximum conducted output power Measurement:

(CIMIN(III B)					
Channel Number	Frequency	Chain A Power	Chain B Power	Output Power	Output Power Limit
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)
36	5180	18.87	18.97	21.93	30
44	5220	18.93	18.89	21.92	30
48	5240	18.83	19.03	21.94	30
149	5745	19.02	19.05	22.05	30
157	5785	18.94	19.03	22.00	30
165	5825	19.05	19.01	22.04	30

(CHAIN A+ B)

Note:

1. Power Output Value =Reading value on average power meter + cable loss

2. Output Power (dBm) = 10LOG (Chain A Power (mW)+ Chain B Power (mW))

Product	:	G.hn Powerline Wireless Extender
Test Item	:	Maximum conducted output power
Test Site	:	No.3 OATS
Test Date	:	2017/07/20
Test Mode	:	Mode 2: Transmit (802.11n-20BW 14.4Mbps)

CHAIN A

Cab	Cable loss=1dB		Maximum conducted output power							
		Data Rate (Mbps)								
Channel No.	Frequency (MHz)	14.4	28.9	43.3	57.8	86.7	115.6	130	144.4	
			Measurement Level (dBm)							
36	5180	19.08								
44	5220	19	18.37	18.32	18.27	18.21	18.16	18.11	18.07	
48	5240	18.89								
149	5745	18.92								
157	5785	19.03	18.39	18.34	18.31	18.27	18.24	18.19	18.13	
165	5825	18.94								

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

CHAIN B

Cab	Cable loss=1dB		Maximum conducted output power						
]	Data Rat	e (Mbps))		
Channel No.	Frequency (MHz)	14.4	28.9	43.3	57.8	86.7	115.6	130	144.4
				Meas	surement	Level (d	lBm)		
36	5180	18.93							
44	5220	19.14	18.51	18.47	18.43	18.37	18.32	18.27	18.23
48	5240	19.04							
149	5745	19.11							
157	5785	18.92	18.3	18.25	18.21	18.16	18.11	18.06	18.01
165	5825	19.04							

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss



Maximum conducted output power Measurement:

(CHIMI(III D)					
Channel Number	Frequency	Chain A Power	Chain B Power	Output Power	Output Power Limit
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)
36	5180	19.08	18.93	22.02	30
44	5220	19	19.14	22.08	30
48	5240	18.89	19.04	21.98	30
149	5745	18.92	19.11	22.03	30
157	5785	19.03	18.92	21.99	30
165	5825	18.94	19.04	22.00	30

(CHAIN A+ B)

Note:

3. Power Output Value = Reading value on average power meter + cable loss

4. Output Power (dBm) = 10LOG (Chain A Power (mW)+ Chain B Power (mW))

Product	:	G.hn Powerline Wireless Extender
Test Item	:	Maximum conducted output power
Test Site	:	No.3 OATS
Test Date	:	2017/07/20
Test Mode	:	Mode 3: Transmit (802.11n-40BW 30Mbps)

CHAIN A

Cab	Cable loss=1dB		Maximum conducted output power						
		Data Rate (Mbps)							
Channel No.	Frequency (MHz)	30	60	90	120	180	240	270	300
		Measurement Level (dBm)							
38	5190	18.04							
46	5230	18.95	17.79	17.73	17.68	17.62	17.57	17.53	17.49
151	5755	19.06							
159	5795	18.83	17.67	17.63	17.57	17.52	17.48	17.43	17.39

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

CHAIN B

Cab	Cable loss=1dB			Maximum conducted output power							
			-]	Data Rat	e (Mbps))				
Channel No.	Frequency (MHz)	30	60	90	120	180	240	270	300		
		Measurement Level (dBm)									
38	5190	19.03									
46	5230	18.98	17.83	17.79	17.73	17.68	17.62	17.57	17.52		
151	5755	18.89									
159	5795	19.02	17.86	17.81	17.76	17.72	17.67	17.63	17.58		

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

Maximum conducted output power Measurement: (CHAIN A+ B)

Channel Number	Frequency	Chain A Power	Chain B Power	Output Power	Output Power Limit
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)
38	5190	18.04	19.03	21.57	30
46	5230	18.95	18.98	21.98	30
151	5755	19.06	18.89	21.99	30
159	5795	18.83	19.02	21.94	30

Note:

1. Power Output Value =Reading value on average power meter + cable loss

2. Output Power (dBm) = 10LOG (Chain A Power (mW)+ Chain B Power (mW))

Product	:	G.hn Powerline Wireless Extender
Test Item	:	Maximum conducted output power
Test Site	:	No.3 OATS
Test Date	:	2017/07/20
Test Mode	:	Mode 4 Transmit (802.11ac-80BW-65Mbps)

Chain A

Cable los	Cable loss=1dB										
Duty factor	=1.93dBm	Maximum conducted output power									
		Data Rate (Mbps)									
Channel No	(MHz)	VTH0	VTH1	VTH2	VTH3	VTH4	VTH5	VTH6	VTH7	VTH8	VTH9
42	5210	18.18	18.14	18.10	18.04	18.00	17.95	17.89	17.84	17.80	17.76
155	155 5775		19.60	19.55	19.50	19.46	19.42	19.36	19.31	19.25	19.19

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss + Duty factor

Chain B

Cable los	Cable loss=1dB										
Duty factor	Maximum conducted output power										
	Frequency		Data Rate (Mbps)								
Channel No	(MHz)	VTH0	VTH1	VTH2	VTH3	VTH4	VTH5	VTH6	VTH7	VTH8	VTH9
42	5210	17.73	17.69	17.62	17.56	17.52	17.46	17.41	17.35	17.30	17.25
155	5775	18.87	18.82	18.76	18.71	18.65	18.60	18.55	18.50	17.45	17.40

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss + Duty factor

Maximum conducted output power Measurement:

Channel No	Frequency Range	26dB Bandwidth	Chain A Power	Chain B Power	Output Power	Output Power Limit	Result
	(MHz)	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	
42	5210		18.18	17.73	20.97	30	Pass
155	5775		18.95	18.87	21.92	30	Pass

Note: Output Power (dBm) = 10LOG (Chain A Power (mW)+ Chain B Power (mW))



26dBc Occupied Bandwidth:

Channel 42 – Chain A

Spectr	um	100	and training	(2)						
Ref Le Att SGL	vel	21,00 dBm 30 dB	1	16.0.00	RBW 1 MHz VBW 3 MHz	Mode Swe	ер			1.
• 1Pk Ma	x									
10 d8m-		M1 M1[1]				12		13.70 dBm 203410 GHz 377123 MHz		
0 dBm—	+			1	+ +	-		1		-
-10 dBm	2.1		M. Mullen May					winner an		
-30 dBm	unde	for the production of	ang Musilen Maria						sources, when	minner
-30 dBm	+	_			-			-		
-40 dBm	+					-	_			-
-50 dBm	-			-		-		-		-
-60 dBm								-		-
-70 dBm	-			-		_		-		
CF 5.21	GHz			_	1001 p	ts		-	Span	200.0 MHz
Marker									-	
Type	Ref	Trc	X-value		Y-value	Functio	n L	Fun	ction Resul	t.
M1		1		11 GHz	13,70 dBm		-			and and and and
T1 T2	-	1	5.17123		2.78 dBm 3.70 dBm	Occ	BW		77.1228	77123 MHz
12	-	1 I	3.24630	ie ane	3.70 UBM	-	-	COLUMN 1	100	111F

Date: 11 JUL 2017 19:08:33

Channel 155 – Chain A

SGL						
1Pk Max		1		M1 M1[1]		13.39 dBn
		1.5 Sec. 1. 1. 1.	la hand and	T. MILLI	5.77	96000 GH
10 dBm-	V.	for and the second		Occ Bw		75524 MH
0.40	1					
0 dBm	r				1	
THO BENT			-			Gumenoning
-20 dBm-			-			-
		· · · · · · · · · · · · · · · · · · ·	1			
-30 dBm						
-40 d8m-						
						-
-50 dBm						-
-60 dBm						
-ou ubili						
-70 dBm						1
34. S. S.			1			
CF 5.775 GI	Hz		1001 pts	5	Span	100.0 MHz
Marker					- AL C. C	
	Trc	X-value	Y-value	Function	Function Result	t.
M1 T1	1	5.7796 GHz 5.7372378 GHz	13,39 dBm 6.07 dBm	Occ Bw	75 5043	75524 MHz
T2	1	5.8127622 GHz	7.08 dBm	OLC BW	75.5244	(5524 MHZ

Date: 11.JUL.2017 19:57:00



26dBc Occupied Bandwidth:

Channel 42 – Chain B

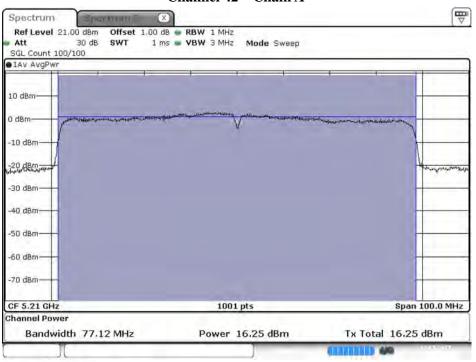
Spect	rum										l □ □ □
Ref L Att SGL	evel :	21.00 dBm 30 dB			RBW 1 MHz VBW 3 MHz	м	lode Sw	eep			
IPk M	ax					_					
10 dBm				MI MI[1] CCC BW		13.26 dB 5.203410 G 76.523476523 M					
0 dBm-		_		7	-	-			1		
-10 dBr	n 2004	mulariu	rtrainne-drav						huse	an manager a service of the	manne
-30 dBr					-	-		-		-	
-40 dBr											
-50 dBr	0	1				1					1
-60 dBr	0										
-70 dBr	n									-	
CF 5.2	1 GHz	5			1001	pts	5	-		Span	200.0 MHz
Marker		5. 1 Q					-			a survey have	
Type	Ref		X-value		Y-value	_	Funct	ion		Function Result	t i
M1 T1 T2		1	5.203		13.26 dE 4.00 dE 4.80 dE	3m	00	c BW		76,5234	76523 MHz
	-	M					1			110 448	

Channel 155 – Chain B

Att SGL	30 d	B SWT 1 ms .	VBW 3 MHz N	1ode Sweep	
1Pk Max					
			M1	M1[1]	12.72 dBn 5 ₇ 7684100 GH
10 dBm	11	man manin	motion	Occ Bw	75:324675325 MH
	1			1	
0 dBm	f				
in the l					
~10-dBta-					Photo and the market
-20 dBm-	-		-		
20 0011		the strength of the	a Carlo and a second second	and the second sec	a second designed and the second
-30 dBm-					
-40 dBm-					
ro in					
-50 dBm-					
-60 dBm					
ou dom					
-70 dBm-					
			· · · · · · · · ·		
CF 5.775 G	Hz		1001 pt	s	Span 100.0 MHz
Marker	10.00			100 million (1990)	and the second sec
Type Ref	Trc	X-value	Y-value	Function	Function Result
M1	1	5.76841 GHz	12.72 dBm		
T1 T2	1	5.7372378 GHz 5.8125624 GHz	6.16 dBm 7.16 dBm	Occ BW	75,324675325 MHz



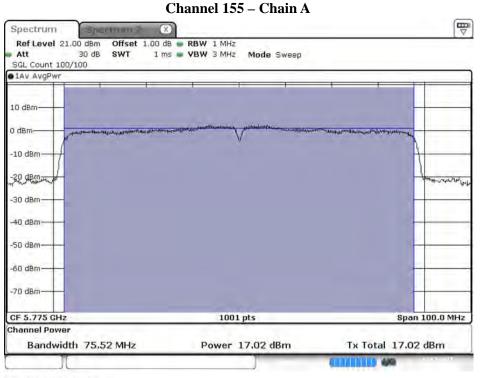
Maximum conducted output power:



Channel 42 – Chain A

Date: 11.JUL 2017 19:10:30

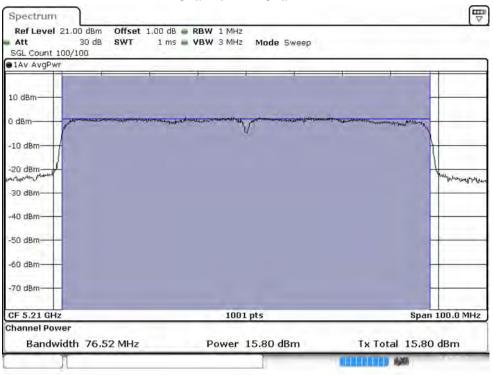
Maximum conducted output power:



Date: 11.JUL.2017 19:58:22



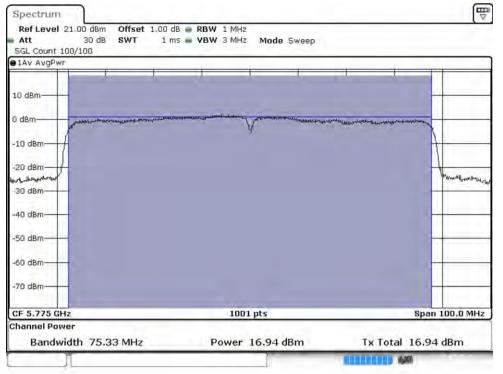
Maximum conducted output power:



Channel 42 – Chain B

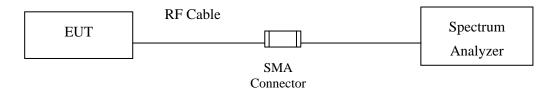
Maximum conducted output power:

Channel 155 – Chain B



4. Peak Power Spectral Density

4.1. Test Setup



4.2. Limits

(1) For the band 5.15-5.25 GHz,

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-topoint U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations. (iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.+

- (2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
- (3) For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, the

maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point UNII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

4.3. Test Procedure

The EUT was setup to ANSI C63.10, 2013; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

The Peak Power Spectral Density using KDB 789033 section F) procedure, Create an average power spectrum for the EUT operating mode being tested by following the instructions in section E)2) for measuring maximum conducted output power using a spectrum analyzer.

SA-1 method is selected to run the test.

For the band 5.725-5.85 GHz, Scale the observed power level to an equivalent value in 500 kHz by adjusting (increase) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log (500 \text{ kHz}/100 \text{ kHz}) = 6.98 \text{ dB}.$

4.4. Uncertainty

± 1.62 dB

4.5. Test Result of Peak Power Spectral Density

Product	:	G.hn Powerline Wireless Extender
Test Item	:	Peak Power Spectral Density
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11a-6Mbps)

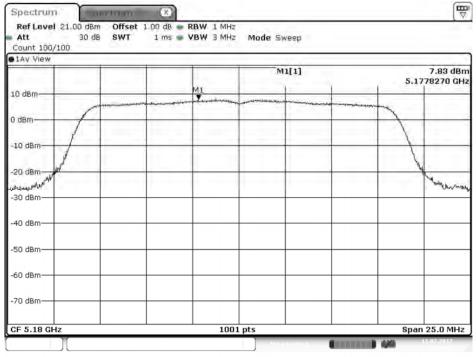
Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	Total PPSD (dBm)1	Required Limit (dBm)	Result
26	5100	А	7.930	10.940	17	Pass
36	5180	В	7.800	10.810	17	Pass
	5220	А	8.290	11.300	17	Pass
44	5220	В	8.530	11.540	17	Pass
40	5240	А	6.030	9.040	17	Pass
48	5240	В	6.270	9.280	17	Pass

Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm)1	Required Limit (dBm)	Result
149	5745	А	0.940	6.980	10.930	<30	Pass
		В	2.150	6.980	12.140	<30	Pass
157	5785	А	-0.010	6.980	9.980	<30	Pass
		В	1.840	6.980	11.830	<30	Pass
165	5825	А	0.450	6.980	10.440	<30	Pass
		В	0.930	6.980	10.920	<30	Pass

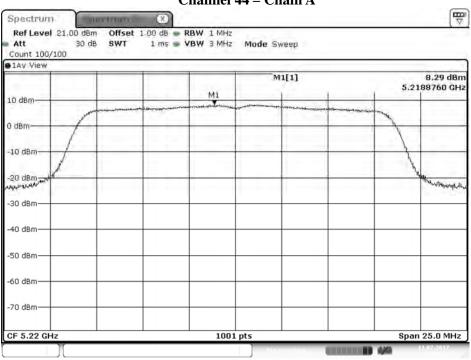
Note 1: The quantity 10*log 2 (two antennas) is added to the spectrum peak value according to document 662911 D01.



Channel 36 – Chain A



Date: 11.JUL.2017 18:56:27



Channel 44 – Chain A

Date: 11.JUL.2017 19:00:27



B Spectrum (X) Ref Level 21.00 dBm Offset 1.00 dB . RBW 1 MHz Att 30 dB SWT 1 ms 🗰 VBW 3 MHz Mode Sweep Count 100/100 ●1Av View M1[1] 6.03 dBm 5.2413490 GHz 10 dBm-M1 0 dBm -10 dBm -20 dBm-Hall and planter dishudow, solarit -30 dBm--40 dBm--50 dBm--60 dBm--70 dBm-CF 5.24 GHz 1001 pts Span 25.0 MHz

Channel 48 – Chain A

Date: 11.JUL.2017 19:03:34

. Spectrum (X) Ref Level 21.00 dBm Offset 1.00 dB . RBW 100 kHz Att 30 dB SWT 1.1 ms 🖝 VBW 300 kHz Mode Sweep Count 100/100 1Av View M1[1] 0.94 dBm 5.7444260 GHz 10 dBm Muranananan 0 dBmwww.www.www. -10 dBm -20 dBm-RICHART mm -40 dBm -50 dBm -60 dBm -70 dBm CF 5.745 GHz 1001 pts Span 25.0 MHz

.Channel 149 – Chain A

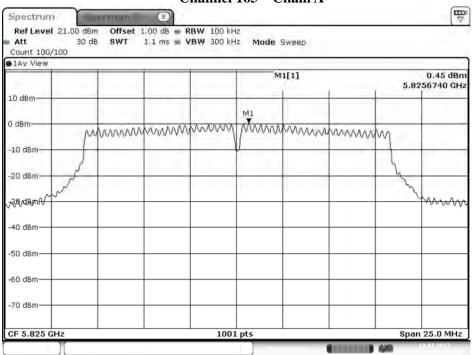
Date: 11.JUL.2017 19:41:33



1 Spectrum (X) Ref Level 21.00 dBm Offset 1.00 dB . RBW 100 kHz Att 30 dB SWT 1.1 ms 🖝 VBW 300 kHz Mode Sweep Count 100/100 ●1Av View M1[1] -0.01 dBm 5.7844260 GHz 10 dBm M1 munumunun 0 dBm mannahannahannahan 10 dBm -20 dBm -Randamin www -40 dBm -50 dBm -60 dBm -70 dBm CF 5.785 GHz 1001 pts Span 25.0 MHz 44

Channel 157 – Chain A

Date: 11.JUL.2017 19:45:06

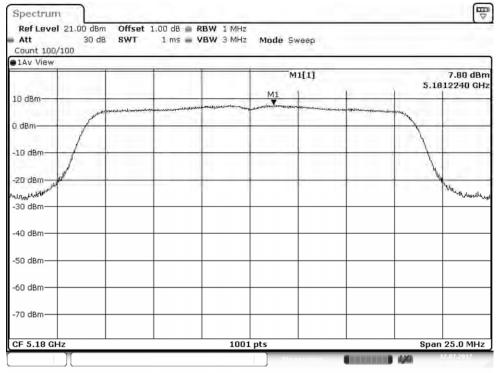


Channel 165 – Chain A

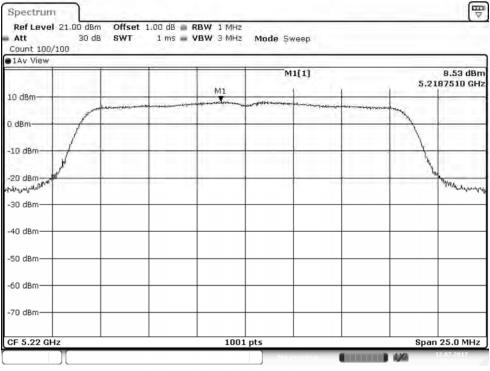
Date: 11.JUL.2017 19:54:48



Channel 36 – Chain B

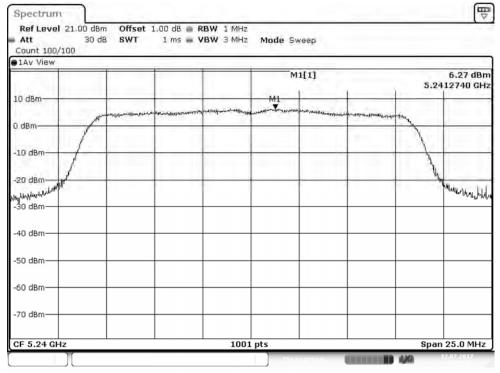


Channel 44 – Chain B

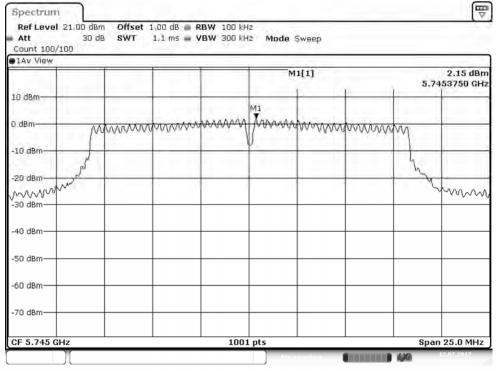




Channel 48 – Chain B



Channel 149 – Chain B

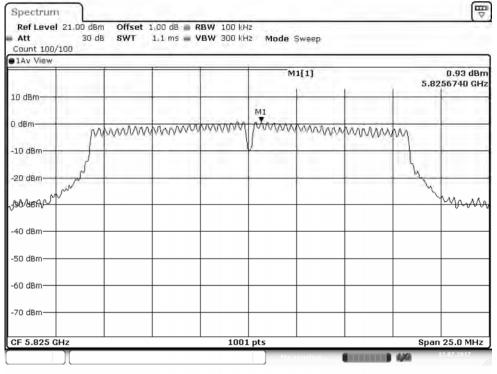




Channel 157 – Chain B

●1Av View					м	1(1)		5.7	1.84 dBm 856740 GHz
10 dBm		-			MI			-	1
0 dBm	M	www	www	wwww		mm	vhnnn	M	-
-10 dBm	N				V		1	-	
-20 dBm	£	-	_			-		2 mg	-
-30 dBm									man
-40 dBm									
-50 dBm									
-60 dBm									
-70 dBm									
-70 dBm					Lpts				n 25.0 M

Channel 165 – Chain B





Product	:	G.hn Powerline Wireless Extender

- Test Item : Peak Power Spectral Density
- Test Site : No.3 OATS

Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps)

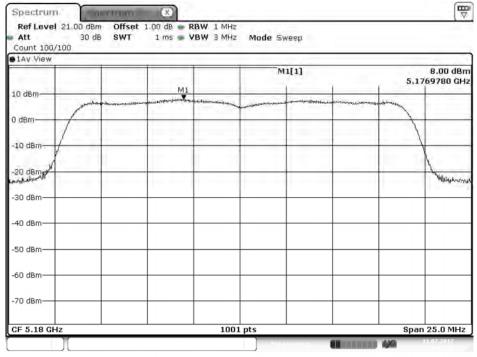
Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	Total PPSD (dBm)1	Required Limit (dBm)	Result
26	5190	А	8.000	11.010	17	Pass
36	5180	В	7.320	10.330	17	Pass
4.4	5220	А	7.950	10.960	17	Pass
44	5220	В	8.290	11.300	17	Pass
40	5240	А	7.620	10.630	17	Pass
48	5240	В	8.170	11.180	17	Pass

Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm)1	Required Limit (dBm)	Result
140	57.45	А	-0.480	6.980	9.510	<30	Pass
149	5745	В	1.440	6.980	11.430	<30	Pass
1.57		А	-0.260	6.980	9.730	<30	Pass
157	5785	В	0.670	6.980	10.660	<30	Pass
165	5025	А	-0.940	6.980	9.050	<30	Pass
165	5825	В	0.550	6.980	10.540	<30	Pass

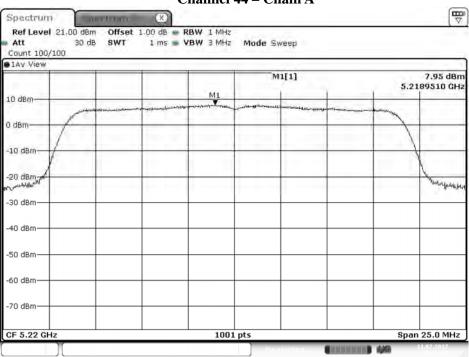
Note 1: The quantity 10*log 2 (two antennas) is added to the spectrum peak value according to document 662911 D01.



Channel 36 – Chain A



Date: 11.JUL.2017 19:13:27



Channel 44 – Chain A

Date: 11.JUL.2017 19:26:38



Channel 48 – Chain A

	M1[1]	7.62 dBm
The second	and the second	5.2415730 GH
10 dBm-	M1	
D dBm		
10 dBm		
-20 d8m-		1
portionality		The west of the second states and
-30 dBm		
-40 dBm		
-50 dBm		
-60 dBm		
-70 dBm		

Date: 11.JUL.2017 19:30:08

₩ Spectrum X Offset 1.00 dB RBW 100 kHz SWT 1.1 ms VBW 300 kHz Ref Level 21.00 dBm Att 30 dB SWT Mode Sweep Count 100/100 1Av View -0.48 dBm 5,7503450 GHz M1[1] 10 dBm 11 0 dBmmannamannaman more manned your -10 dBm -20 dBm -40 ganmalan www.www.www. muunununununununun -50 dBm -60 dBm--70 dBm-CF 5.745 GHz 1001 pts Span 50.0 MHz Concerned in the local division of the local

.Channel 149 – Chain A

Date: 11.JUL.2017 20:00:52



			1	_	M	1[1]			-0.26 dBn
	1						1	5,78	54000 GH
10 dBm									
0 dBm			KANKANAAA	MMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM	MAMMAMMAN	MANANANANA			
-10 dBm				1					
-20 dBm			/						
-30 dBm	unnunnun	Whankmant					horizon	uuuuuuu	.
-40 dBMM	Anda							1.00	Mutuun
-50 dBm									
-60 dBm									

Channel 157 – Chain A

Date: 11.JUL.2017 20:04:19

₩ Spectrum X UCOC) Ref Level 21.00 dBm Offset 1.00 dB . RBW 100 kHz Att 30 dB SWT 1.1 ms 🖝 VBW 300 kHz Mode Sweep Count 100/100 1Av View -0.94 dBm 5.8241010 GHz M1[1] 10 dBm-M1 0 dBmmanumumumum monormanumumumumu 10 dBm -20 dBm-Willy was war war war war -30 dBmpantamining -40 dBmphut -50 dBm -60 dBm -70 dBm-CF 5.825 GHz 1001 pts Span 50.0 MHz 14.00

Channel 165 – Chain A

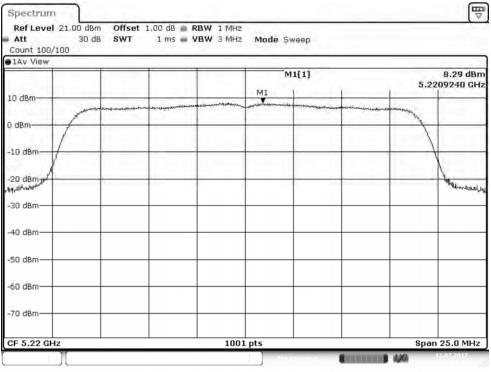
Date: 11.JUL.2017 20:09:01



Channel 36 – Chain B

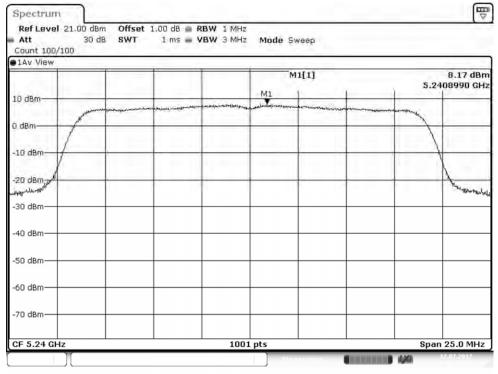
Count 100/100 1Av View		24.20		Mode St			_	_
TAV VIEW	1			M	11(1)		7.1 5.18079	32 dBn
10 dBm	-			MI	1 1	1		Ju un
0 dBm	ang tang ang tang tang tang tang tang ta	and the second and a second	AST MILLION CONTRACTOR	- and a second	and a second		1	
-10 dBm							\rightarrow	
-20 dBm			-		-	_	$-\lambda$	_
سیاییس ^{امیر} -30 dBm								Hertowy
-40 dBm								
-50 dBm								
-60 dBm								
-70 dBm								
CF 5.18 GHz			1001	pts			Span 25.	0 MHz

Channel 44 – Chain B

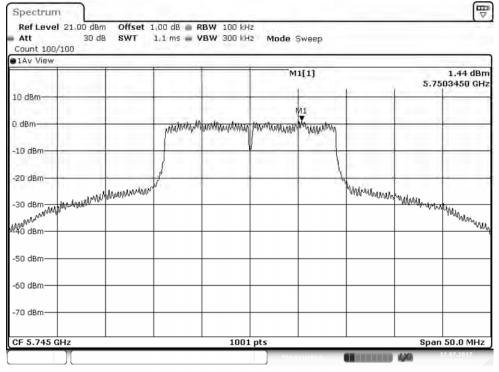




Channel 48 – Chain B



Channel 149 – Chain B





				M	(1)		5.78	0.67 dBm 44010 GHz
10 dBm								
0 dBm	-	panahaphaan	M1	WAMMUNAAN	Manapathang			
-10 dBm	-							
-20 dBm	-	1						
-30 dBm	ANN MITHIN AND MICH.	V*				Monumen	willing which	hyphranker
-50 dBm								
-60 dBm								
-70 dBm								
CF 5.785 GHz			1001	ots			Span	50.0 MHz

Channel 165 – Chain B

		-	-						
1.00					M	1(1)		5.82	0.55 dBr 44510 GH
10 dBm	-	-				-	-		
1	1.000		1.00	MI	6.751		1.000		1000
) dBm			NAMAMAN	Munnavalumin N	www.www.www.	Wymum			
-10 dBm	-					-	-		
-20 dBm		-	1/						_
-30 dBm	44	unun	r				WWWWWWW	the Line	
MM	MANAMANAN	ydraellaraar					WWWWWW	"WWWWWWWW	Walnut .
Muvaem—									Mucoult
-50 dBm									
-60 dBm									
00 00.00		1	1	1 1					



Product	:	G.hn Powerline Wireless Extender
Test Item	:	Peak Power Spectral Density
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11n-40BW 30Mbps)

Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	Total PPSD (dBm)1	Required Limit (dBm)	Result
20	5100	А	3.970	6.980	17	Pass
38	5190	В	5.470	8.480	17	Pass
16	5220	А	3.630	6.640	17	Pass
46	5230	В	5.260	8.270	17	Pass

Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm)1	Required Limit (dBm)	Result
151	151 5755	А	-4.060	6.980	5.930	<30	Pass
151		В	-1.660	6.980	8.330	<30	Pass
150	5705	А	-2.470	6.980	7.520	<30	Pass
159	5795	В	-2.340	6.980	7.650	<30	Pass

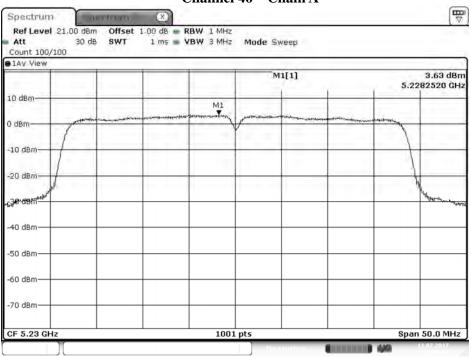
Note 1: The quantity 10*log 2 (two antennas) is added to the spectrum peak value according to document 662911 D01.



Channel 38 – Chain A

		N	41[1]		3.97 dBn
10 d8m-		MI	1 1	5,19	29970 GH
0 dBm	and the second	 and for the	and show the second	amountainty	
-10 dBm	-	_			_
-20 dBm					-
eo dem ment					13 Valeration of the
-40 dBm					
-50 dBm					
-60 dBm					
-70 dBm					

Date: 11.JUL.2017 19:35:11



Channel 46 – Chain A

Date: 11.JUL.2017 19:38:53



Channel 151 – Chain A

1Av View						A			
					M	1[1]		5,75	-4.06 dBn 26000 GH
10 d8m-		-					-		
0 dBm	_			MI				-	
-10 dBm	-		any the manufacture	palan di milan kalikan	and the second sec	and the state of t		-	
-20 dBm			1		1				_
-30 dBm			[1	Making at		
-40 dBm-	and the state of the	gadirarahi maningan art					underlighten der	Will Wing and the	
up lange and and	tikhot .							. av ite	toplated with a later of the second
-50 dBm-									
-60 dBm									
-70 dBm-									

Date: 11.JUL.2017 20:11:44

B Spectrum X Ref Level 21.00 dBm Offset 1.00 dB . RBW 100 kHz 1 ms 🖝 VBW 300 kHz Att 30 dB SWT Mode Sweep Count 100/100 1Av View -2.47 dBm 5,7988000 GHz M1[1] 10 dBm M 1 When the second state of the second state 0 dBmnumeral and a spectra and an -10 dBm -20 dBm างให้เอาไปหลู่คนร้องไปสะการสมมาร์สกปลุปการแหล -40 dBm มปะเมย์มีปลายศารรรมสายเสียงเลืองเป็นเป็นเป็นเป็นไป -30 dBm--50 dBm -60 dBm--70 dBm-CF 5.795 GHz 1001 pts Span 100.0 MHz **C**INE OF

Channel 159 – Chain A

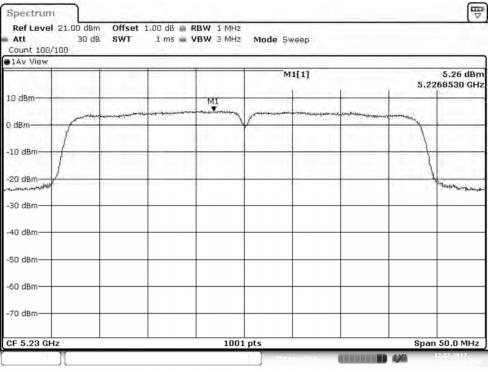
Date: 11.JUL.2017 20:14:47



Channel 38 – Chain B

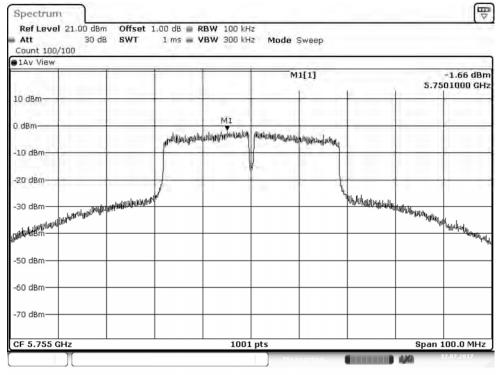
	1 1	M1[1	
0 dBm		M1 1	5.1889510 G
dBm	an anna chlan an an anna an an an an an an an an an		harmon and the second
10 dBm			
20 dBm			mension
30 dBm			
40 dBm			
50 dBm			
60 dBm			

Channel 46 – Chain B

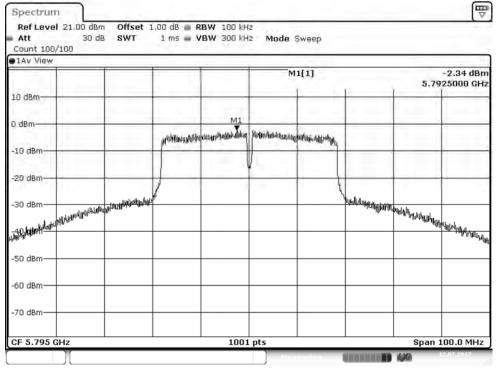




Channel 151 – Chain B



Channel 159 – Chain B





Product	:	G.hn Powerline Wireless Extender
Test Item	:	Peak Power Spectral Density
Test Site	:	No.3 OATS
Test Mode	:	Mode 4 Transmit (802.11ac-80BW-65Mbps)

Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	Total PPSD (dBm)1	Required Limit (dBm)	Result
10	5010	А	2.320	5.330	17	Pass
42	5210	В	1.960	4.970	17	Pass

Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm)1	Required Limit (dBm)	Result
1.5.5		А	-5.350	6.98	4.640	<30	Pass
155	5775	В	-6.110	6.98	3.880	<30	Pass

Note 1: The quantity 10*log 2 (two antennas) is added to the spectrum peak value according to document 662911 D01.



1Av View						1.1			
					N	11[1]		5.20	2.32 dBn 176000 GH
10 dBm	-				-	-		-	
0 dBm		anne a contration	مراسمان معلوم مالارام م	MI	janding-andream	-			
o upin	1				1		and the second second	transfer wert	
-10 dBm-	1						-		-
-20 dBm	/						_	1	-
-30 dBm									
-40 dBm—									
-50 dBm—									
-60 dBm—									
-70 dBm									

Channel 42 – Chain A

Date: 11.JUL.2017 19:10:08

Channel 155: CHAIN A

_					м	1[1]		5.77	-5.35 dBn
10 dBm		-			-	-	-		
) dBm		-		M1					
10 dBm	Autorial for It.	alayah da ladahaza	wonto-buildeda	neterlateleterneter	publikesesser	pisticity in a light the light	animination of the	manaphana	-
20 dBm				-	1		1		
and a phane	/							4	anter and the second second
40 dBm									
50 dBm									
60 dBm									

Date: 11.JUL.2017 19:57:59



Channel 42 – Chain B

Att 30 dB Count 100/100 P1Av View	SWT 1 ms = VBW 3 M	/Hz Mode Sweep	
		M1[1]	1.96 dBn 5.2128000 GH
10 dBm-		M1	-
0 dBm	and a second	- Vinon	and a second a second a second a second a second a second a
-10 dBm			
-20 dBm			Mureurowally a
-30 dBm			
-40 dBm			
-50 dBm			
-60 dBm			
-70 dBm			
CF 5.21 GHz		001 pts	Span 100.0 MHz

Channel 155: CHAIN B

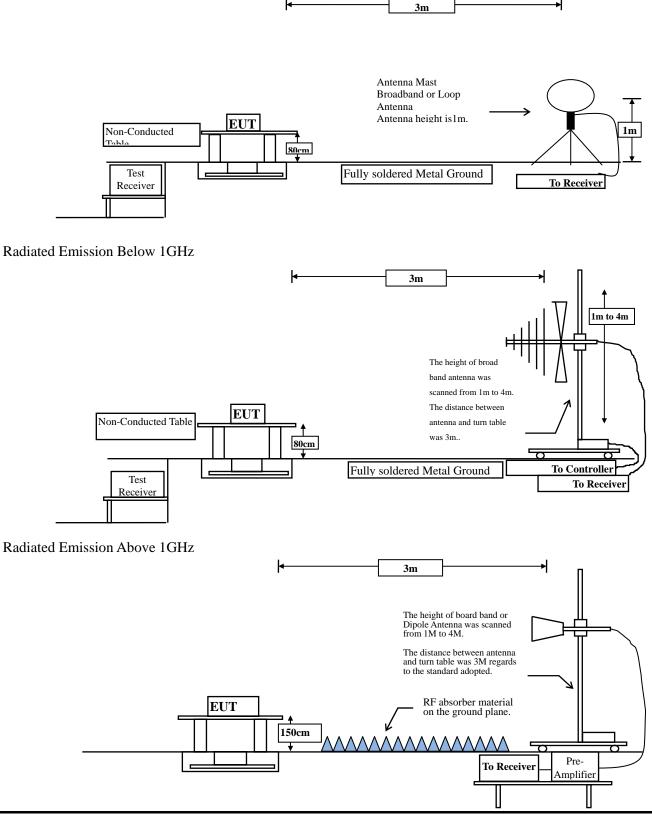
		-	-		-	10.00			
					M	1[1]		5.77	-6.11 dBr 76000 GH
10 dBm	,					-			
0 dBm	-				M1				
-10 dBm	Ward and the state	union in the production	wanter hij sich die der	yendbanlerholikh	punders photostal	anning say af the state of the	apadulationary	noodapadapad	-
-20 dBm	-								-
-30 dBm Միթվմայիիիի	/								կ Կեղեն, ծներեկյ
-40 dBm									
-50 dBm									
-60 dBm									
-70 dBm									



5. Radiated Emission

5.1. Test Setup

Radiated Emission Under 30MHz



5.2. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 S	Subpart C Paragraph 15	5.209(a) Limits
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remarks: E field strength $(dB\mu V/m) = 20 \log E$ field strength (uV/m)

5.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013 and tested according to FCC KDB-789033 test procedure for compliance to FCC 47CFR 15. 407 requirements.

Measuring the frequency range below 1GHz, the EUT is placed on a turn table which is 0.8 meter above ground, when measuring the frequency range above 1GHz, the EUT is placed on a turn table which is 1.5 meter above ground.

The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2013 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

Radiated emission measurements below 30MHz are made using Loop Antenna and 30MHz~1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement. The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna. The worst radiated emission is measured in the Open Area Test Site on the Final Measurement. The measurement frequency range form 9kHz - 10th Harmonic of fundamental was investigated.

The average measurement tested according to KDB 789033 section H)6)d) Method VB (Averaging using reduced video bandwidth).

Mode	Duty Cycle	Т	1/T	VBW Setting
802.11a	0.882	1.41 ms	707 Hz	1 KHz
802.11n-20	0.876	1.32 ms	754 Hz	1 KHz
802.11n-40	0.780	0.66 ms	1499 Hz	2 KHz
802.11ac-80	0.644	0.34 ms	2936 Hz	3 KHz

VBW ≥ 1/T:

5.4. Uncertainty

Horizontal polarization :

30-300MHz: ±4.08dB ; 300M-1GHz: ±3.86dB ; 1-18GHz: ±3.77dB ; 18-40GHz: ±3.98dB Vertical polarization :

30-300MHz: ±4.81dB ; 300M-1GHz: ±3.87dB ; 1-18GHz : ±3.83dB ; 18-40GHz: ±3.98dB

5.5. Test Result of Radiated Emission

Product	:	G.hn Powerline Wireless Extender
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/18
Test Mode	:	Mode 1: Transmit (802.11a-6Mbps) (5180MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	dBµV/m	dB	dBµV/m
Horizontal					
Peak Detector:					
10360.000	0.102	67.090	67.192	-6.808	74.000
Average Detector:					
10360.000	0.102	53.330	53.432	-0.568	54.000
Vertical					
Peak Detector:					
10360.000	0.102	68.567	68.669	-5.331	74.000
Average Detector:					
10360.000	0.102	53.807	53.909	-0.091	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.

- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 1kHz, Sweep: Auto.

4. Measurement Level = Reading Level + Correct Factor.

- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	G.hn Powerline Wireless Extender
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/18
Test Mode	:	Mode 1: Transmit (802.11a-6Mbps) (5220MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	$dB\mu V/m$	dB	dBµV/m
Horizontal					
Peak Detector:					
10440.000	0.149	66.820	66.969	-7.031	74.000
Average Detector:					
10440.000	0.149	52.280	52.429	-1.571	54.000
Vertical					
Peak Detector:					
10440.000	0.149	67.243	67.392	-6.608	74.000
Average Detector:					
10440.000	0.149	53.763	53.912	-0.088	54.000

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.

- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 1kHz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

:	G.hn Powerline Wireless Extender
:	Harmonic Radiated Emission Data
:	No.3 OATS
:	2017/07/18
:	Mode 1: Transmit (802.11a-6Mbps) (5240MHz)
	: : :

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	$dB\mu V/m$	dB	dBµV/m
Horizontal					
Peak Detector:					
10480.000	0.181	64.090	64.270	-9.730	74.000
Average Detector:					
10480.000	0.181	50.050	50.230	-3.770	54.000
Vertical					
Peak Detector:					
10480.000	0.181	68.005	68.185	-5.815	74.000
Average Detector:					
10480.000	0.181	53.585	53.765	-0.235	54.000

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.

2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.

3. Average measurements: RBW = 1MHz, VBW = 1kHz, Sweep: Auto.

4. Measurement Level = Reading Level + Correct Factor.

5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.

6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	G.hn Powerline Wireless Extender
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/18
Test Mode	:	Mode 1: Transmit (802.11a-6Mbps) (5745MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal Peak Detector:					
11490.000	1.619	64.380	65.999	-8.001	74.000
Average Detector	•				
11490.000	1.619	51.380	52.999	-1.001	54.000
Vertical Peak Detector:					
11490.000	1.619	65.879	67.498	-6.502	74.000
Average Detector	••				
11490.000	1.619	51.899	53.518	-0.482	54.000

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.

2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.

3. Average measurements: RBW = 1MHz, VBW = 1kHz, Sweep: Auto.

4. Measurement Level = Reading Level + Correct Factor.

5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.

6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	G.hn Powerline Wireless Extender
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/18
Test Mode	:	Mode 1: Transmit (802.11a-6Mbps) (5785MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
11570.000	1.728	65.290	67.018	-6.982	74.000
Average Detector:					
11570.000	1.728	51.420	53.148	-0.852	54.000
Vertical					
Peak Detector:					
11570.000	1.728	64.562	66.290	-7.710	74.000
Average Detector:					
11570.000	1.728	50.392	52.120	-1.880	54.000
NT /					

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.

- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 1kHz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.

6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	G.hn Powerline Wireless Extender
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/18
Test Mode	:	Mode 1: Transmit (802.11a-6Mbps) (5825MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
11650.000	1.846	66.260	68.106	-5.894	74.000
Average Detector:					
11650.000	1.846	51.940	53.786	-0.214	54.000
Vertical					
Peak Detector:					
11650.000	1.846	65.830	67.676	-6.324	74.000
Average Detector:					
11650.000	1.846	50.520	52.366	-1.634	54.000

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.

2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.

- 3. Average measurements: RBW = 1MHz, VBW = 1kHz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	G.hn Powerline Wireless Extender
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/18
Test Mode	:	Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5180MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	dBµV/m	dB	dBµV/m
Horizontal					
Peak Detector:					
10360.000	0.102	64.630	64.732	-9.268	74.000
Average Detector:					
10360.000	0.102	49.860	49.962	-4.038	54.000
Vertical					
Peak Detector:					
10360.000	0.102	70.467	70.569	-3.431	74.000
Average Detector:					
10360.000	0.102	53.807	53.909	-0.091	54.000

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.

- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 1kHz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

:	G.hn Powerline Wireless Extender
:	Harmonic Radiated Emission Data
:	No.3 OATS
:	2017/07/18
:	Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5220MHz)
	:

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	dBµV/m	dB	dBµV/m
Horizontal					
Peak Detector:					
10440.000	0.149	67.180	67.329	-6.671	74.000
Average Detector:					
10440.000	0.149	51.890	52.039	-1.961	54.000
Vertical					
Peak Detector:					
10440.000	0.149	68.943	69.092	-4.908	74.000
Average Detector:					
10440.000	0.149	53.783	53.932	-0.068	54.000

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.

- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 1kHz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	G.hn Powerline Wireless Extender
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/18
Test Mode	:	Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5240MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	$dB\mu V/m$	dB	dBµV/m
Horizontal					
Peak Detector:					
10480.000	0.181	63.030	63.210	-10.790	74.000
Average Detector:					
10480.000	0.181	47.530	47.710	-6.290	54.000
Vertical					
Peak Detector:					
10480.000	0.181	70.455	70.635	-3.365	74.000
Average Detector:					
10480.000	0.181	53.755	53.935	-0.065	54.000

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 1kHz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	G.hn Powerline Wireless Extender
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/18
Test Mode	:	Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5745MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
11490.000	1.619	64.550	66.169	-7.831	74.000
Average Detector:					
11490.000	1.619	51.210	52.829	-1.171	54.000
Vertical					
Peak Detector:					
11490.000	1.619	63.565	65.184	-8.816	74.000
Average Detector:					
11490.000	1.619	51.559	53.178	-0.822	54.000

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.

2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.

3. Average measurements: RBW = 1MHz, VBW = 1kHz, Sweep: Auto.

4. Measurement Level = Reading Level + Correct Factor.

5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.

6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	G.hn Powerline Wireless Extender
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/18
Test Mode	:	Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5785MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
11570.000	1.728	64.940	66.668	-7.332	74.000
Average Detector:					
11570.000	1.728	51.170	52.898	-1.102	54.000
Vertical					
Peak Detector:					
11570.000	1.728	66.432	68.160	-5.840	74.000
Average Detector:					
11570.000	1.728	51.772	53.500	-0.500	54.000

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.

- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 1kHz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.

6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	G.hn Powerline Wireless Extender
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/18
Test Mode	:	Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5825MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
11650.000	1.846	65.340	67.186	-6.814	74.000
Average Detector:					
11650.000	1.846	51.560	53.406	-0.594	54.000
Vertical					
Peak Detector:					
11650.000	1.846	64.860	66.706	-7.294	74.000
Average Detector:					
11650.000	1.846	50.120	51.966	-2.034	54.000

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.

2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.

- 3. Average measurements: RBW = 1MHz, VBW = 1kHz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	G.hn Powerline Wireless Extender
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/18
Test Mode	:	Mode 3: Transmit (802.11n-40BW 30Mbps) (5190MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	dBµV/m	dB	dBµV/m
Horizontal					
Peak Detector:					
10380.000	0.131	64.450	64.581	-9.419	74.000
Average Detector:					
10380.000	0.131	52.180	52.311	-1.689	54.000
Vertical					
Peak Detector:					
4726.950	-6.171	58.654	52.483	-21.517	74.000
10380.000	0.131	64.616	64.747	-9.253	74.000
Average Detector:					
10380.000	0.131	53.836	53.967	-0.033	54.000

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.

- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 2kHz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	G.hn Powerline Wireless Extender
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/18
Test Mode	:	Mode 3: Transmit (802.11n-40BW 30Mbps) (5230MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	dBµV/m	dB	dBµV/m
Horizontal					
Peak Detector:					
10460.000	0.150	61.920	62.070	-11.930	74.000
Average Detector:					
10460.000	0.150	52.120	52.270	-1.730	54.000
Vertical					
Peak Detector:					
4767.180	-6.139	60.095	53.956	-20.044	74.000
10460.000	0.150	67.457	67.607	-6.393	74.000
Average Detector:					
10460.000	0.150	53.387	53.537	-0.463	54.000

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.

- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 2kHz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	G.hn Powerline Wireless Extender
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/18
Test Mode	:	Mode 3: Transmit (802.11n-40BW 30Mbps) (5755MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
11510.000	1.620	62.030	63.651	-10.349	74.000
Average Detector:					
11510.000	1.620	50.890	52.511	-1.489	54.000
Vertical					
Peak Detector:					
1762.930	-11.117	79.206	68.090	-5.910	74.000
11510.000	1.620	63.443	65.064	-8.936	74.000
Average Detector:					
1762.930	-11.117	64.946	53.830	-0.170	54.000
11510.000	1.620	50.383	52.004	-1.996	54.000

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.

- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 2kHz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	G.hn Powerline Wireless Extender
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/18
Test Mode	:	Mode 3: Transmit (802.11n-40BW 30Mbps) (5795MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
11590.000	1.753	62.816	64.569	-9.431	74.000
Average Detector:					
11590.000	1.753	48.896	50.649	-3.351	54.000
Vertical					
Peak Detector:					
11590.000	1.753	63.690	65.443	-8.557	74.000
Average Detector:					
11590.000	1.753	50.450	52.203	-1.797	54.000

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.

2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.

- 3. Average measurements: RBW = 1MHz, VBW = 2kHz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	G.hn Powerline Wireless Extender
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/18
Test Mode	:	Mode 4 Transmit (802.11ac-80BW-65Mbps) (5210MHz)

Correct	Reading	Measurement	Margin	Limit
Factor	Level	Level		
dB	dBuV	dBuV/m	dB	dBuV/m
0.107	59.890	59.997	-14.003	74.000
0.107	52.190	52.297	-1.703	54.000
-6.166	66.883	60.717	-13.283	74.000
0.107	61.600	61.707	-12.293	74.000
-6.166	57.023	50.857	-3.143	54.000
0.107	48.611	48.718	-5.282	54.000
	Factor dB 0.107 0.107 -6.166 0.107 -6.166	Factor Level dB dBuV 0.107 59.890 0.107 52.190 -6.166 66.883 0.107 61.600 -6.166 57.023	Factor Level Level dB dBuV dBuV/m 0.107 59.890 59.997 0.107 52.190 52.297 -6.166 66.883 60.717 0.107 61.600 61.707 -6.166 57.023 50.857	Factor Level Level dB dBuV dBuV/m dB 0.107 59.890 59.997 -14.003 0.107 52.190 52.297 -1.703 -6.166 66.883 60.717 -13.283 0.107 61.600 61.707 -12.293 -6.166 57.023 50.857 -3.143

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.

- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 3kHz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	G.hn Powerline Wireless Extender
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/18
Test Mode	:	Mode 4 Transmit (802.11ac-80BW-65Mbps) (5775MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
11550.000	1.718	60.920	62.638	-11.362	74.000
Average Detector:					
11550.000	1.718	50.400	52.118	-1.882	54.000
Vertical					
Peak Detector:					
1351.800	-12.906	62.840	49.934	-24.066	74.000
11550.000	1.718	62.760	64.478	-9.522	74.000
Average Detector:					
11550.000	1.718	50.470	52.188	-1.812	54.000

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.

2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.

3. Average measurements: RBW = 1MHz, VBW = 3kHz, Sweep: Auto.

4. Measurement Level = Reading Level + Correct Factor.

5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.

6. The average measurement was not performed when the peak measured data under the limit of average detection.

7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product Test Item Test Site Test Date Test Mode	 G.hn Powerline Wireless Extender General Radiated Emission No.3 OATS 2017/07/12 Mode 1: Transmit (802.11a-6Mbps) (5220MHz) 					
Frequency	Correct	Reading	Measurement	Margin	Limit	
	Factor	Level	Level	-		
MHz	dB	dBµV	$dB\mu V/m$	dB	dBµV/m	
Horizontal						
Peak Detector						
124.188	-12.662	44.422	31.761	-11.739	43.500	
290.072	-10.298	43.949	33.651	-12.349	46.000	
337.870	-9.245	50.526	41.281	-4.719	46.000	
374.420	-8.297	54.013	45.716	-0.284	46.000	
717.435	-1.689	29.857	28.169	-17.831	46.000	
874.884	0.235	43.294	43.529	-2.471	46.000	
Vertical						
Peak Detector						
37.029	-11.511	51.122	39.612	-0.388	40.000	
193.072	-13.561	42.654	29.094	-14.406	43.500	
374.420	-8.297	48.977	40.680	-5.320	46.000	
531.870	-4.903	37.104	32.202	-13.798	46.000	
676.667	-2.389	35.185	32.796	-13.204	46.000	
874.884	0.235	35.245	35.480	-10.520	46.000	

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 1kHz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 8. No emission found between lowest internal used/generated frequency to 30MHz.



Product Test Item Test Site Test Date Test Mode	 G.hn Powerline Wireless Extender General Radiated Emission No.3 OATS 2017/07/12 Mode 1: Transmit (802.11a-6Mbps) (5785MHz) 					
Frequency	Correct	Reading	Measurement	Margin	Limit	
	Factor	Level	Level			
MHz	dB	dBµV	dBµV/m	dB	dBµV/m	
Horizontal						
Peak Detector						
124.188	-12.662	44.422	31.761	-11.739	43.500	
337.870	-9.245	50.921	41.676	-4.324	46.000	
374.420	-8.297	53.913	45.616	-0.384	46.000	
531.870	-4.903	32.420	27.518	-18.482	46.000	
730.087	-1.510	35.850	34.339	-11.661	46.000	
874.884	0.235	43.294	43.529	-2.471	46.000	
Vertical						
Peak Detector						
41.246	-11.085	49.942	38.857	-1.143	40.000	
290.072	-10.298	41.779	31.481	-14.519	46.000	
374.420	-8.297	48.977	40.680	-5.320	46.000	
579.667	-3.816	33.746	29.930	-16.070	46.000	
746.957	-1.285	38.437	37.152	-8.848	46.000	
874.884	0.235	35.245	35.480	-10.520	46.000	

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 1kHz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 8. No emission found between lowest internal used/generated frequency to 30MHz.



Product Test Item Test Site Test Date Test Mode	 G.hn Powerline Wireless Extender General Radiated Emission No.3 OATS 2017/07/12 Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5220MHz) 					
Frequency	Correct	Reading	Measurement	Margin	Limit	
	Factor	Level	Level			
MHz	dB	dBµV	dBµV/m	dB	dBµV/m	
Horizontal						
Peak Detector						
96.072	-16.475	39.454	22.979	-20.521	43.500	
290.072	-10.298	45.395	35.097	-10.903	46.000	
374.420	-8.297	54.013	45.716	-0.284	46.000	
576.855	-3.884	29.945	26.061	-19.939	46.000	
759.609	-1.130	29.259	28.130	-17.870	46.000	
879.101	0.286	29.041	29.327	-16.673	46.000	
Vertical						
Peak Detector	11.00-		~~~~	0 = 10	10.000	
41.246	-11.085	50.342	39.257	-0.743	40.000	
374.420	-8.297	48.977	40.680	-5.320	46.000	
482.667	-5.847	45.030	39.183	-6.817	46.000	
624.652	-3.141	39.610	36.469	-9.531	46.000	
749.768	-1.247	37.395	36.148	-9.852	46.000	
874.884	0.235	35.245	35.480	-10.520	46.000	

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 1kHz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 8. No emission found between lowest internal used/generated frequency to 30MHz.



Product Test Item Test Site Test Date Test Mode	 G.hn Powerline Wireless Extender General Radiated Emission No.3 OATS 2017/07/12 Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5785MHz) 					
Frequency	Correct	Reading	Measurement	Margin	Limit	
	Factor	Level	Level			
MHz	dB	dBµV	dBµV/m	dB	dBµV/m	
Horizontal						
Peak Detector						
124.188	-12.662	44.422	31.761	-11.739	43.500	
232.435	-12.508	33.614	21.107	-24.893	46.000	
332.246	-9.369	45.512	36.144	-9.856	46.000	
374.420	-8.297	53.813	45.516	-0.484	46.000	
773.667	-0.965	37.816	36.851	-9.149	46.000	
874.884	0.235	43.294	43.529	-2.471	46.000	
Vertical Peak Detector						
41.246	-11.085	49.742	38.657	-1.343	40.000	
337.870	-9.245	47.619	38.374	-7.626	46.000	
482.667	-5.847	45.030	39.183	-6.817	46.000	
628.870	-3.104	35.958	32.854	-13.146	46.000	
746.957	-1.285	38.437	37.152	-8.848	46.000	

859.420

-

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.

28.801

-17.199

46.000

- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 1kHz, Sweep: Auto.

28.748

4. Measurement Level = Reading Level + Correct Factor.

0.052

- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 8. No emission found between lowest internal used/generated frequency to 30MHz.



46.000

46.000

Product Test Item Test Site Test Date Test Mode	 G.hn Powerline Wireless Extender General Radiated Emission No.3 OATS 2017/07/12 Mode 3: Transmit (802.11n-40BW 30Mbps) (5190MHz) 					
Frequency	Correct	Reading	Measurement	Margin	Limit	
	Factor	Level	Level			
MHz	dB	dBµV	dBµV/m	dB	dBµV/m	
Horizontal						
Peak Detector						
142.464	-11.007	29.466	18.459	-25.041	43.500	
285.855	-10.393	39.809	29.416	-16.584	46.000	
337.870	-9.245	53.028	43.783	-2.217	46.000	
374.420	-8.297	54.013	45.716	-0.284	46.000	
649.957	-2.922	33.154	30.231	-15.769	46.000	
876.290	0.251	40.568	40.820	-5.180	46.000	
Vertical						
Peak Detector						
37.029	-11.511	51.480	39.970	-0.030	40.000	
193.072	-13.561	42.654	29.094	-14.406	43.500	
374.420	-8.297	48.977	40.680	-5.320	46.000	
531.870	-4.903	37.778	32.876	-13.124	46.000	

Note:

746.957

874.884

-

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.

37.152

35.480

-8.848

-10.520

- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 2kHz, Sweep: Auto.

38.437

35.245

4. Measurement Level = Reading Level + Correct Factor.

-1.285

0.235

- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 8. No emission found between lowest internal used/generated frequency to 30MHz.



Product Test Item Test Site Test Date Test Mode	 G.hn Powerline Wireless Extender General Radiated Emission No.3 OATS 2017/07/12 Mode 3: Transmit (802.11n-40BW 30Mbps) (5755MHz) 					
Frequency	Correct	Reading	Measurement	Margin	Limit	
	Factor	Level	Level			
MHz	dB	dBµV	dBµV/m	dB	dBµV/m	
Horizontal						
Peak Detector						
124.188	-12.662	44.422	31.761	-11.739	43.500	
337.870	-9.245	53.028	43.783	-2.217	46.000	
374.420	-8.297	53.913	45.616	-0.384	46.000	
482.667	-5.847	41.607	35.760	-10.240	46.000	
749.768	-1.247	36.133	34.886	-11.114	46.000	
950.797	1.095	34.158	35.253	-10.747	46.000	
Vertical Peak Detector						
37.029	-11.511	51.480	39.970	-0.030	40.000	
337.870	-9.245	47.619	38.374	-7.626	46.000	
482.667	-5.847	45.030	39.183	-6.817	46.000	
649.957	-2.922	37.322	34.399	-11.601	46.000	
746.957	-1.285	38.437	37.152	-8.848	46.000	
874.884	0.235	35.245	35.480	-10.520	46.000	

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 2kHz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 8. No emission found between lowest internal used/generated frequency to 30MHz.



Product Test Item Test Site Test Date Test Mode	 G.hn Powerline Wireless Extender General Radiated Emission No.3 OATS 2017/07/18 Mode 1: Transmit (802.11a-6Mbps) (5220MHz)_Loop 					
Frequency	Correct	Reading	Measurement	Margin	Limit	
	Factor	Level	Level			
MHz	dB	dBµV	dBµV/m	dB	dBµV/m	
Horizontal						
Peak Detector						
8.104	19.870	24.700	44.570	-24.970	69.540	
12.221	20.000	20.160	40.160	-29.380	69.540	
16.350	20.090	24.700	44.790	-24.750	69.540	
18.385	20.070	20.360	40.430	-29.110	69.540	
22.643	20.060	21.200	41.260	-28.280	69.540	
25.331	20.172	25.190	45.362	-24.178	69.540	
Vertical Peak Detector						
3.526	19.810	23.900	43.710	-25.830	69.540	
10.325	19.930	25.890	45.820	-23.720	69.540	
13.654	20.020	36.800	56.820	-12.720	69.540	
18.712	20.060	25.490	45.550	-23.990	69.540	
23.036	20.076	35.300	55.376	-14.164	69.540	
26.352	20.200	26.350	46.550	-22.990	69.540	

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 1kHz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 8. No emission found between lowest internal used/generated frequency to 30MHz.



Product Test Item Test Site Test Date Test Mode	 G.hn Powerline Wireless Extender General Radiated Emission No.3 OATS 2017/07/18 Mode 1: Transmit (802.11a-6Mbps) (5785MHz) _Loop 					
Frequency	Correct	Reading	Measurement	Margin	Limit	
	Factor	Level	Level	-		
MHz	dB	dBµV	$dB\mu V/m$	dB	dBµV/m	
Horizontal						
Peak Detector						
4.623	19.890	10.060	29.950	-39.590	69.540	
8.788	19.870	23.420	43.290	-26.250	69.540	
16.159	20.090	21.190	41.280	-28.260	69.540	
23.558	20.110	24.320	44.430	-25.110	69.540	
24.115	20.140	22.460	42.600	-26.940	69.540	
25.312	20.170	23.610	43.780	-25.760	69.540	
Vertical Peak Detector						
8.628	19.870	24.680	44.550	-24.990	69.540	
13.169	20.020	39.100	59.120	-10.420	69.540	
13.457	20.020	39.400	59.420	-10.120	69.540	
18.224	20.070	25.710	45.780	-23.760	69.540	
22.254	20.040	39.230	59.270	-10.270	69.540	
28.065	20.160	24.625	44.785	-24.755	69.540	

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 1kHz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 8. No emission found between lowest internal used/generated frequency to 30MHz.



Product Test Item Test Site Test Date Test Mode	 G.hn Powerline Wireless Extender General Radiated Emission No.3 OATS 2017/07/18 Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5220MHz)_Loop 					
Frequency	Correct	Reading	Measurement	Margin	Limit	
	Factor	Level	Level			
MHz	dB	dBµV	dBµV/m	dB	dBµV/m	
Horizontal						
Peak Detector						
8.991	19.870	23.700	43.570	-25.970	69.540	
16.470	20.094	21.400	41.494	-28.046	69.540	
20.335	20.010	20.540	40.550	-28.990	69.540	
23.850	20.130	24.630	44.760	-24.780	69.540	
24.113	20.140	22.900	43.040	-26.500	69.540	
26.335	20.200	16.980	37.180	-32.360	69.540	
Vertical Peak Detector						
13.490	20.020	40.110	60.130	-9.410	69.540	
13.985	20.020	40.600	60.620	-8.920	69.540	
19.326	20.040	20.360	40.400	-29.140	69.540	
22.753	20.060	40.030	60.090	-9.450	69.540	
24.356	20.150	24.850	45.000	-24.540	69.540	
28.111	20.160	25.060	45.220	-24.320	69.540	

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 1kHz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 8. No emission found between lowest internal used/generated frequency to 30MHz.



Product Test Item Test Site Test Date Test Mode	 G.hn Powerline Wireless Extender General Radiated Emission No.3 OATS 2017/07/18 Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5785MHz) _Loop 					
Frequency	Correct	Reading	Measurement	Margin	Limit	
	Factor	Level	Level			
MHz	dB	dBµV	dBµV/m	dB	dBµV/m	
Horizontal						
Peak Detector						
8.654	19.870	16.710	36.580	-32.960	69.540	
13.167	20.020	21.300	41.320	-28.220	69.540	
17.010	20.100	13.700	33.800	-35.740	69.540	
22.913	20.070	20.200	40.270	-29.270	69.540	
23.030	20.074	23.750	43.824	-25.716	69.540	
27.745	20.170	24.621	44.791	-24.749	69.540	
Vertical Peak Detector						
8.525	19.870	20.570	40.440	-29.100	69.540	
13.746	20.020	38.520	58.540	-11.000	69.540	
13.951	20.020	39.030	59.050	-10.490	69.540	
15.675	20.080	20.650	40.730	-28.810	69.540	
23.265	20.090	39.060	59.150	-10.390	69.540	
28.159	20.160	24.350	44.510	-25.030	69.540	

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 1kHz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 8. No emission found between lowest internal used/generated frequency to 30MHz.



Product Test Item Test Site Test Date Test Mode	 G.hn Powerline Wireless Extender General Radiated Emission No.3 OATS 2017/07/18 Mode 3: Transmit (802.11n-40BW 30Mbps) (5190MHz) _Loop 					
Frequency	Correct	Reading	Measurement	Margin	Limit	
	Factor	Level	Level			
MHz	dB	dBµV	dBµV/m	dB	dBµV/m	
Horizontal						
Peak Detector						
7.665	19.880	18.240	38.120	-31.420	69.540	
13.540	20.020	22.000	42.020	-27.520	69.540	
17.060	20.100	14.500	34.600	-34.940	69.540	
22.991	20.070	23.800	43.870	-25.670	69.540	
23.450	20.100	21.600	41.700	-27.840	69.540	
27.332	20.190	22.740	42.930	-26.610	69.540	
T 7 4 • 1						
Vertical Peak Detector						
4.552	19.890	20.650	40.540	-29.000	69.540	
4.332 13.597						
	20.020	38.030	58.050	-11.490	69.540	
14.113	20.027	39.010	59.037	-10.503	69.540	
19.335	20.040	21.260	41.300	-28.240	69.540	
23.060	20.080	39.200	59.280	-10.260	69.540	
25.638	20.190	25.110	45.300	-24.240	69.540	

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 2kHz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 8. No emission found between lowest internal used/generated frequency to 30MHz.



Product Test Item Test Site Test Date Test Mode	 G.hn Powerline Wireless Extender General Radiated Emission No.3 OATS 2017/07/18 Mode 3: Transmit (802.11n-40BW 30Mbps) (5755MHz) _Loop 					
Frequency	Correct	Reading	Measurement	Margin	Limit	
	Factor	Level	Level			
MHz	dB	dBµV	dBµV/m	dB	dBµV/m	
Horizontal						
Peak Detector						
9.032	19.870	24.030	43.900	-25.640	69.540	
13.695	20.020	21.360	41.380	-28.160	69.540	
16.820	20.100	22.400	42.500	-27.040	69.540	
23.810	20.130	25.160	45.290	-24.250	69.540	
24.853	20.160	22.490	42.650	-26.890	69.540	
27.215	20.190	25.010	45.200	-24.340	69.540	
Vertical Peak Detector						
7.446	19.880	21.060	40.940	-28.600	69.540	
13.740	20.020	40.200	60.220	-9.320	69.540	
13.885	20.020	39.500	59.520	-10.020	69.540	
18.659	20.060	20.690	40.750	-28.790	69.540	
22.778	20.060	39.400	59.460	-10.080	69.540	
24.854	20.160	25.620	45.780	-23.760	69.540	

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 2kHz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 8. No emission found between lowest internal used/generated frequency to 30MHz.



Product	· Ghn Po	warling Wirgless	Extender					
Test Item	 G.hn Powerline Wireless Extender General Radiated Emission 							
Test Site	: No.3 OATS							
Test Date	: 2017/07/12							
Test Mode								
Test Mode	: Mode 4	11alisiliit (802.11	ac-oob w-051v10ps) (3	(210MHZ) L00)			
Frequency	Correct	Reading	Measurement	Margin	Limit			
	Factor	Level	Level					
MHz	dB	dBµV	dBµV/m	dB	dBµV/m			
Horizontal								
Peak Detector								
49.681	-10.911	44.607	33.696	-6.304	40.000			
290.072	-10.298	44.857	34.559	-11.441	46.000			
374.420	-8.297	54.071	45.774	-0.226	46.000			
434.870	-6.771	45.657	38.886	-7.114	46.000			
624.652	-3.141	35.522	32.381	-13.619	46.000			
773.667	-0.965	37.024	36.059	-9.941	46.000			
Vertical								
Peak Detector								
37.029	-11.511	50.481	38.971	-1.029	40.000			
249.304	-11.829	36.929	25.100	-20.900	46.000			
374.420	-8.297	49.978	41.681	-4.319	46.000			
624.652	-3.141	40.618	37.477	-8.523	46.000			
649.957	-2.922	36.186	33.263	-12.737	46.000			
874.884	0.235	34.863	35.098	-10.902	46.000			

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.

2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.

- 3. Average measurements: RBW = 1MHz, VBW = 3kHz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.

6. The average measurement was not performed when the peak measured data under the limit of average detection.

7. The emission levels of other frequencies are very lower than the limit and not show in test report.

8. No emission found between lowest internal used/generated frequency to 30MHz.



Product Test Item Test Site Test Date Test Mode	: General : No.3 Oz : 2017/07	/12		775 MH a) Loo	
Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBµV	dBµV/m	dB	dBµV/m
Horizontal					
Peak Detector					
124.188	-12.662	44.425	31.764	-11.736	43.500
290.072	-10.298	45.921	35.623	-10.377	46.000
374.420	-8.297	53.971	45.674	-0.326	46.000
531.870	-4.903	33.322	28.420	-17.580	46.000
676.667	-2.389	32.526	30.137	-15.863	46.000
874.884	0.235	43.729	43.964	-2.036	46.000
Vertical					
Peak Detector					
41.246	-11.085	49.116	38.031	-1.969	40.000
337.870	-9.245	48.934	39.689	-6.311	46.000
482.667	-5.847	43.947	38.100	-7.900	46.000
579.667	-3.816	34.002	30.186	-15.814	46.000
821.464	-0.402	30.241	29.838	-16.162	46.000
862.232	0.085	28.611	28.696	-17.304	46.000

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.

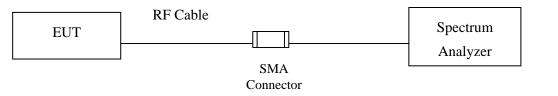
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 3kHz, Sweep: Auto.
- 4. Measurement Level = Reading Level + Correct Factor.
- 5. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 8. No emission found between lowest internal used/generated frequency to 30MHz.



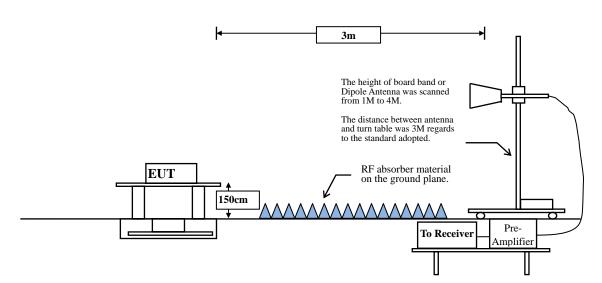
6. Band Edge

6.1. Test Setup

RF Conducted Measurement:



RF Radiated Measurement:



6.2. Limits

The provisions of Section 15.205 of this part apply to intentional radiators operating under this section.

Radiated emissions which fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209:

FCC Part 15 Subpart C Paragraph 15.209 Limits							
Frequency	uV/m @3m	dBµV/m@3m					
MHz							
30-88	100	40					
88-216	150	43.5					
216-960	200	46					
Above 960	500	54					

Remarks : 1. RF Voltage $(dB\mu V) = 20 \log RF$ Voltage (uV)

2. In the Above Table, the tighter limit applies at the band edges.

3. Distance refers to the distance in meters between the measuring instrument

antenna and the closed point of any part of the device or system.

6.3. Test Procedure

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10:2013 on radiated measurement.

The bandwidth below 1GHz setting on the field strength meter is 120 kHz, above 1GHz are 1 MHz. The EUT was setup to ANSI C63.10, 2013; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

The average measurement tested according to KDB 789033 section H)6)d) Method VB (Averaging using reduced video bandwidth).

VBW ≥ 1/T:				
Mode	Duty Cycle	Т	1/T	VBW Setting
802.11a	0.882	1.41 ms	707 Hz	1 KHz
802.11n-20	0.876	1.32 ms	754 Hz	1 KHz
802.11n-40	0.780	0.66 ms	1499 Hz	2 KHz
802.11ac-80	0.644	0.34 ms	2936 Hz	3 KHz

6.4. Uncertainty

Conducted: ±1.23dB Radiated: Horizontal polarization : 1-18GHz: ±3.77dB Vertical polarization : 1-18GHz : ±3.83dB

6.5. **Test Result of Band Edge**

Product	:	G.hn Powerline Wireless Extender
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/10
Test Mode	:	Mode 1: Transmit (802.11a-6Mbps)-Channel 36

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Emission Level (dBµV/m)	Peak Limit (dBµV/m)	Average Limit (dBµV/m)	Result
36 (Peak)	5148.696	17.384	42.020	59.404	74.00	54.00	Pass
36 (Peak)	5150.000	17.386	39.599	56.985	74.00	54.00	Pass
36 (Peak)	5175.362	17.427	91.715	109.142			
36 (Average)	5150.000	17.386	24.543	41.929	74.00	54.00	Pass
36 (Average)	5179.130	17.437	82.152	99.588			

Figure Channel 36:

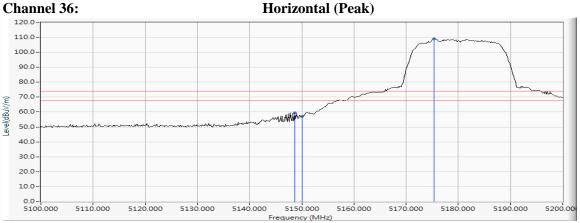
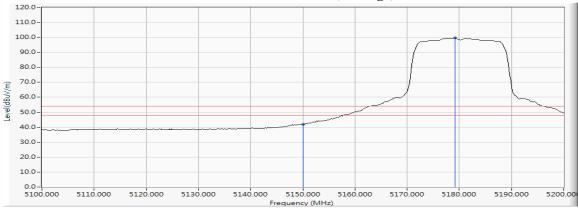


Figure Channel 36:

Horizontal (Average)



Note:1. All readings above 1GHz are performed with peak and/or average measurements as necessary.

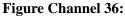
- Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto. 2.
- Average measurements: RBW = 1MHz, VBW = 1kHz, Sweep: Auto. 3.
- "*", means this data is the worst emission level. 4.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.



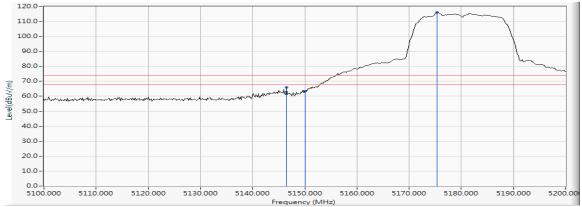
Product	:	G.hn Powerline Wireless Extender
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/10
Test Mode	:	Mode 1: Transmit (802.11a-6Mbps)-Channel 36

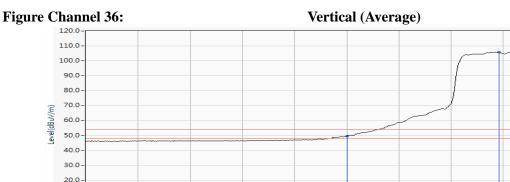
RF Radiated Measurement (Vertical):

Channel No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Result
Channel No.	(MHz)	(dB)	(dBµV)	(dBµV/m)	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
36 (Peak)	5146.522	17.381	48.729	66.111	74.00	54.00	Pass
36 (Peak)	5150.000	17.386	46.034	63.420	74.00	54.00	Pass
36 (Peak)	5175.362	17.427	98.592	116.019			
36 (Average)	5150.000	17.386	32.228	49.614	74.00	54.00	Pass
36 (Average)	5179.130	17.437	88.362	105.798			



Vertical (Peak)





Note:

10.0-0.0-5100.000

5110.000

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.

Fre

5150.000 quency (MHz)

5140.000

2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.

5130.000

- 3. Average measurements: RBW = 1MHz, VBW = 1kHz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.

5120.000

- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

5160.000

5170.000

5180.000

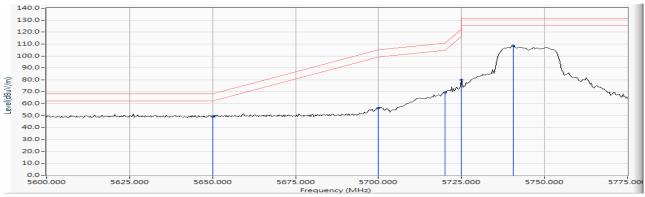
5190.000

5200.00

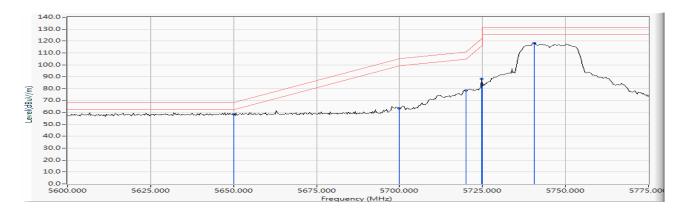


Product	:	G.hn Powerline Wireless Extender
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/10
Test Mode	:	Mode 1: Transmit (802.11a-6Mbps)-Channel 149

RF Radiated Measurement:



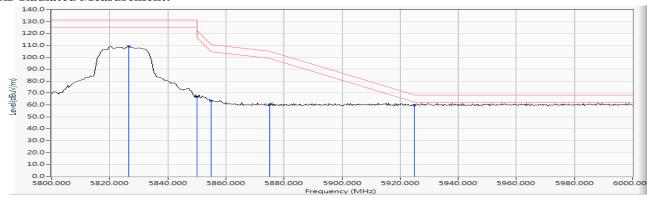
	Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Result
	(MHz)	(dB)	(dBµV)	$(dB\mu V/m)$	(dB)	$(dB\mu V/m)$	Kesuit
Horizontal	5650.000	18.483	30.547	49.029	-19.191	68.220	Pass
Horizontal	5700.000	18.632	37.574	56.206	-48.994	105.200	Pass
Horizontal	5720.000	18.693	50.712	69.405	-41.395	110.800	Pass
Horizontal	5725.000	18.711	61.198	79.909	-42.291	122.200	Pass
Horizontal	5740.507	18.765	89.757	108.522			



	Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Result
	(MHz)	(dB)	(dBµV)	$(dB\mu V/m)$	(dB)	$(dB\mu V/m)$	Result
Vertical	5650.000	18.483	39.917	58.399	-9.821	68.220	Pass
Vertical	5700.000	18.632	44.863	63.495	-41.705	105.200	Pass
Vertical	5720.000	18.693	59.701	78.394	-32.406	110.800	Pass
Vertical	5724.783	18.709	69.626	88.336	-33.369	121.705	Pass
Vertical	5725.000	18.711	64.734	83.445	-38.755	122.200	Pass
Vertical	5740.507	18.765	99.468	118.233			

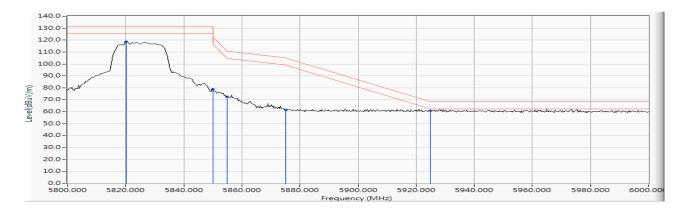


Product	:	G.hn Powerline Wireless Extender
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/10
Test Mode	:	Mode 1: Transmit (802.11a-6Mbps)-Channel 165



RF Radiated Measurement:

	Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	D ocult
	(MHz)	(dB)	(dBµV)	$(dB\mu V/m)$	(dB)	$(dB\mu V/m)$	Result
Horizontal	5826.667	19.027	90.198	109.225			
Horizontal	5850.000	19.103	47.776	66.879	-55.321	122.200	Pass
Horizontal	5855.000	19.115	44.400	63.516	-47.284	110.800	Pass
Horizontal	5875.000	19.177	41.070	60.247	-44.953	105.200	Pass
Horizontal	5925.000	19.333	40.178	59.510	-8.690	68.200	Pass



	Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Result
	(MHz)	(dB)	(dBµV)	$(dB\mu V/m)$	(dB)	$(dB\mu V/m)$	Kesult
Vertical	5820.290	41.195	99.613	118.628			
Vertical	5850.000	41.246	59.589	78.692	-43.508	122.200	Pass
Vertical	5855.000	41.251	53.321	72.437	-38.363	110.800	Pass
Vertical	5875.000	41.288	42.489	61.666	-43.534	105.200	Pass
Vertical	5925.000	41.380	41.308	60.640	-7.560	68.200	Pass



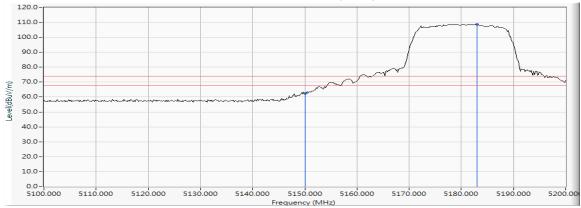
Product	:	G.hn Powerline Wireless Extender
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/10
Test Mode	:	Mode 2: Transmit (802.11n-20BW 14.4Mbps) -Channel 36

RF Radiated Measurement (Horizontal):

Channel No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Result
	(MHz)	(dB)	(dBµV)	$(dB\mu V/m)$	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
36 (Peak)	5150.000	17.386	45.149	62.535	74.00	54.00	Pass
36 (Peak)	5183.043	17.445	91.345	108.790			
36 (Average)	5150.000	17.386	29.133	46.519	74.00	54.00	Pass
36 (Average)	5181.739	17.442	82.367	99.809			

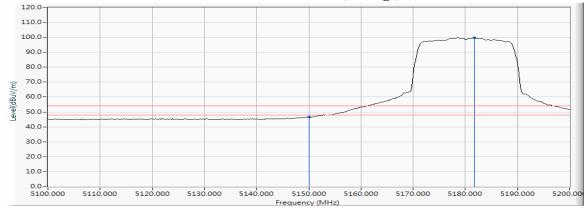
Figure Channel 36:

Horizontal (Peak)





Horizontal (Average)



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 1kHz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.



Product	:	G.hn Powerline Wireless Extender
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/10
Test Mode	:	Mode 2: Transmit (802.11n-20BW 14.4Mbps) -Channel 36

RF Radiated Measurement (Vertical):

Channel No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Result
	(MHz)	(dB)	(dBµV)	(dBµV/m)	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
36 (Peak)	5150.000	17.386	52.079	69.465	74.00	54.00	Pass
36 (Peak)	5177.536	17.433	98.075	115.507			
36 (Average)	5150.000	17.386	32.799	50.185	74.00	54.00	Pass
36 (Average)	5178.696	17.435	89.019	106.454			

Figure Channel 36:

Vertical (Peak)

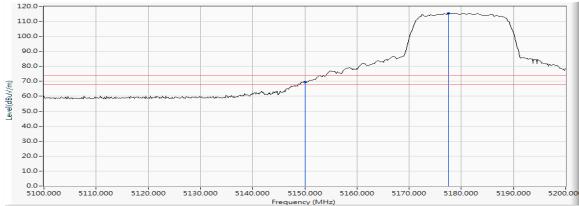
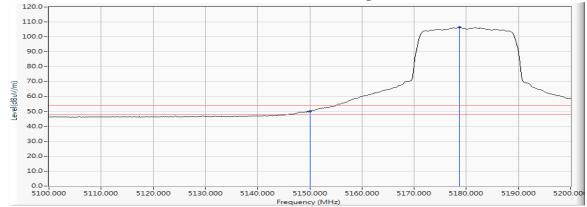


Figure Channel 36:

Vertical (Average)

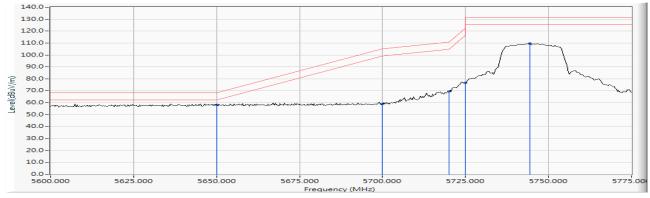


- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 1kHz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

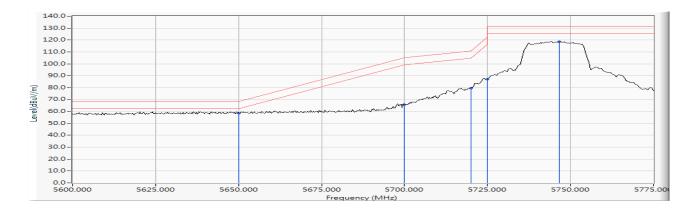


Product	:	G.hn Powerline Wireless Extender
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/10
Test Mode	:	Mode 2: Transmit (802.11n-20BW 14.4Mbps)-Channel 149

RF Radiated Measurement:



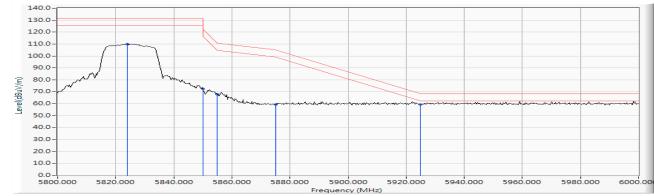
	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Measure Level (dBµV /m)	Margin (dB)	Limit (dBµV /m)	Result
	× ,	(uD)			(uD)	(0) (0) (0) (0) (0) (0) (0) (0) (0) (0)	
Horizontal	5650.000	18.483	39.605	58.087	-10.133	68.220	Pass
Horizontal	5700.000	18.632	40.294	58.926	-46.274	105.200	Pass
Horizontal	5720.000	18.693	50.754	69.447	-41.353	110.800	Pass
Horizontal	5725.000	18.711	57.842	76.553	-45.647	122.200	Pass
Horizontal	5744.312	18.773	90.665	109.439			



	Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Result
	(MHz)	(dB)	(dBµV)	$(dB\mu V/m)$	(dB)	$(dB\mu V/m)$	Result
Vertical	5650.000	18.483	40.074	58.556	-9.664	68.220	Pass
Vertical	5700.000	18.632	47.020	65.652	-39.548	105.200	Pass
Vertical	5720.000	18.693	60.799	79.492	-31.308	110.800	Pass
Vertical	5725.000	18.711	68.496	87.207	-34.993	122.200	Pass
Vertical	5746.594	18.779	99.766	118.545			

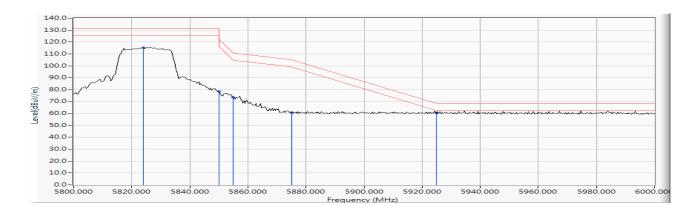


Product	:	G.hn Powerline Wireless Extender
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/10
Test Mode	:	Mode 2: Transmit (802.11n-20BW 14.4Mbps)-Channel 165



RF Radiated Measurement:

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Measure Level (dBµV /m)	e	Limit (dBµV /m)	Result
Horizontal	5824.058	19.022	90.942	109.964			
Horizontal	5850.000	19.103	53.468	72.571	-49.629	122.200	Pass
Horizontal	5855.000	19.115	48.970	68.086	-42.714	110.800	Pass
Horizontal	5875.000	19.177	40.109	59.286	-45.914	105.200	Pass
Horizontal	5925.000	19.333	40.156	59.488	-8.712	68.200	Pass



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Measure Level (dBµV /m)	0	Limit (dBµV/m)	Result
Vertical	5824.058	19.022	96.266	115.288			
Vertical	5850.000	19.103	59.298	78.401	-43.799	122.200	Pass
Vertical	5855.000	19.115	54.322	73.438	-37.362	110.800	Pass
Vertical	5875.000	19.177	41.599	60.776	-44.424	105.200	Pass
Vertical	5925.000	19.333	41.223	60.555	-7.645	68.200	Pass



Product	:	G.hn Powerline Wireless Extender
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/10
Test Mode	:	Mode 3: Transmit (802.11n-40BW 30Mbps)-Channel 38

RF Radiated Measurement (Horizontal):

Channel No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Result
	(MHz)	(dB)	(dBµV)	(dBµV/m)	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
38 (Peak)	5150.000	17.386	46.939	64.325	74.00	54.00	Pass
38 (Peak)	5184.493	17.448	87.644	105.092			
38 (Average)	5150.000	17.386	30.879	48.265	74.00	54.00	Pass
38 (Average)	5191.739	17.465	78.719	96.183			

Figure Channel 38:

Horizontal (Peak)

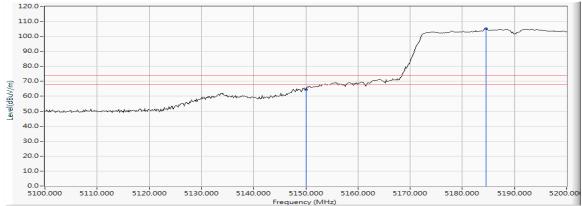
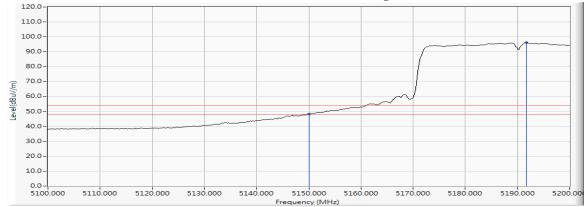


Figure Channel 38:

Horizontal (Average)



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 2kHz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.



Product	:	G.hn Powerline Wireless Extender
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/10
Test Mode	:	Mode 3: Transmit (802.11n-40BW 30Mbps)-Channel 38

RF Radiated Measurement (Vertical):

Channel No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Result
	(MHz)	(dB)	(dBµV)	(dBµV/m)	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
38 (Peak)	5150.000	17.386	48.673	66.059	74.00	54.00	Pass
38 (Peak)	5199.130	17.481	83.376	100.857			
38 (Average)	5150.000	17.386	30.582	47.968	74.00	54.00	Pass
38 (Average)	5191.449	17.462	73.928	91.391			

Figure Channel 38:

Vertical (Peak)

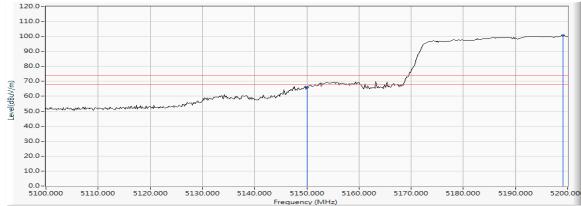
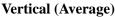
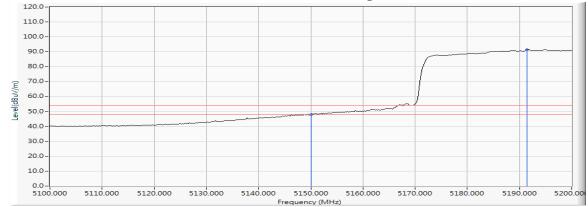


Figure Channel 38:



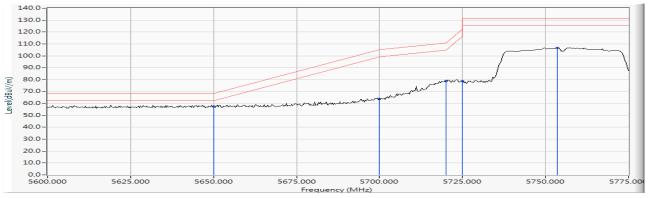


- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 2kHz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

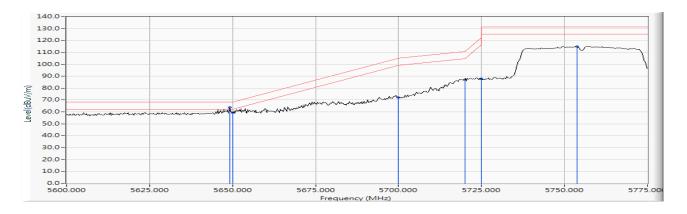


Product	:	G.hn Powerline Wireless Extender
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/10
Test Mode	:	Mode 3: Transmit (802.11n-40BW 30Mbps) -Channel 151

RF Radiated Measurement :



	Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Result
	(MHz)	(dB)	(dBµV)	$(dB\mu V/m)$	(dB)	$(dB\mu V/m)$	Result
Horizontal	5650.000	18.483	38.883	57.365	-10.855	68.220	Pass
Horizontal	5700.000	18.632	45.212	63.844	-41.356	105.200	Pass
Horizontal	5720.000	18.693	60.240	78.933	-31.867	110.800	Pass
Horizontal	5725.000	18.711	59.970	78.681	-43.519	122.200	Pass
Horizontal	5753.442	18.796	87.945	106.740			

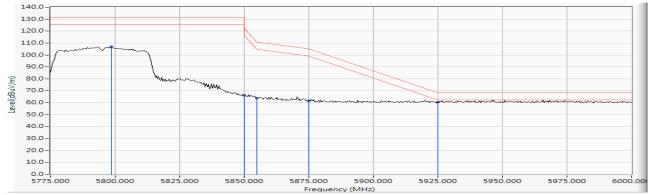


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Measure Level (dBµV /m)	Margin (dB)	Limit (dBµV /m)	Result
Vertical	5649.203	18.479	45.172	63.651	-4.569	68.220	Pass
Vertical	5650.000	18.483	41.001	59.483	-8.737	68.220	Pass
Vertical	5700.000	18.632	53.612	72.244	-32.956	105.200	Pass
Vertical	5720.000	18.693	68.245	86.938	-23.862	110.800	Pass
Vertical	5725.000	18.711	69.300	88.011	-34.189	122.200	Pass
Vertical	5753.696	18.796	96.230	115.026			

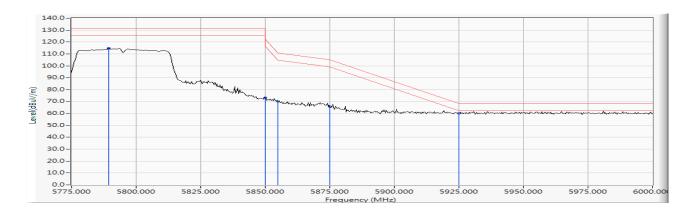


Product	:	G.hn Powerline Wireless Extender
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/10
Test Mode	:	Mode 3: Transmit (802.11n-40BW 30Mbps)-Channel 159

RF Radiated Measurement:



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Measure Level (dBµV /m)	Margin (dB)	Limit (dBµV /m)	Result
Horizontal	5798.478	18.947	87.958	106.904			
Horizontal	5850.000	19.103	47.057	66.160	-56.040	122.200	Pass
Horizontal	5855.000	19.115	44.865	63.981	-46.819	110.800	Pass
Horizontal	5875.000	19.177	42.295	61.472	-43.728	105.200	Pass
Horizontal	5925.000	19.333	41.152	60.484	-7.716	68.200	Pass



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Measure Level (dBµV /m)	Margin (dB)	Limit (dBµV /m)	Result
Vertical	5789.348	18.913	95.791	114.704			
Vertical	5850.000	19.103	53.918	73.021	-49.179	122.200	Pass
Vertical	5855.000	19.115	50.890	70.006	-40.794	110.800	Pass
Vertical	5875.000	19.177	46.546	65.723	-39.477	105.200	Pass
Vertical	5925.000	19.333	40.819	60.151	-8.049	68.200	Pass



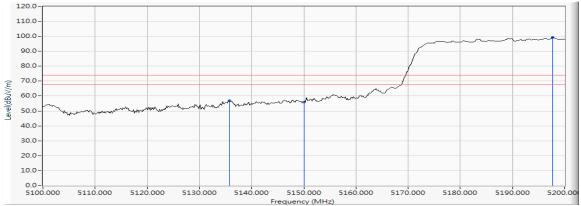
Product	:	G.hn Powerline Wireless Extender
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/10
Test Mode	:	Mode 4 Transmit (802.11ac-80BW-65Mbps)-Channel 42

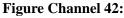
RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Emission Level (dBµV/m)	Peak Limit (dBµV/m)	Average Limit (dBµV/m)	Result
42 (Peak)	5135.797	17.369	39.424	56.793	74.00	54.00	Pass
42 (Peak)	5150.000	17.386	38.567	55.953	74.00	54.00	Pass
42 (Peak)	5197.681	17.477	81.845	99.323			
42 (Average)	5150.000	17.386	27.038	44.424	74.00	54.00	Pass
42 (Average)	5197.681	17.477	70.821	88.299			

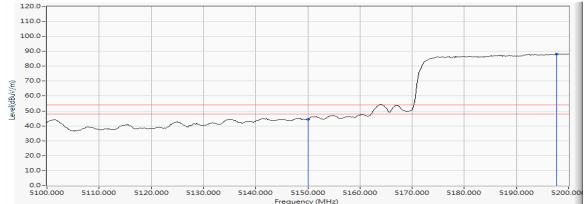
Figure Channel 42:

Horizontal (Peak)





Horizontal (Average)



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 3kHz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.



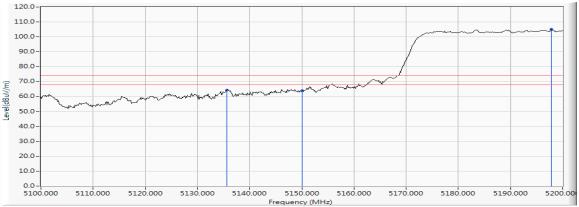
Product	:	G.hn Powerline Wireless Extender
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/10
Test Mode	:	Mode 4 Transmit (802.11ac-80BW-65Mbps) -Channel 42

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Emission Level (dBµV/m)	Peak Limit (dBµV/m)	Average Limit (dBµV/m)	Result
42 (Peak)	5135.652	17.369	46.913	64.282	74.00	54.00	Pass
42 (Peak)	5150.000	17.386	46.574	63.960	74.00	54.00	Pass
42 (Peak)	5197.826	17.477	87.697	105.175			
42 (Average)	5147.971	17.383	34.868	52.251	74.00	54.00	Pass
42 (Average)	5150.000	17.386	34.212	51.598	74.00	54.00	Pass
42 (Average)	5197.826	17.477	76.578	94.056			

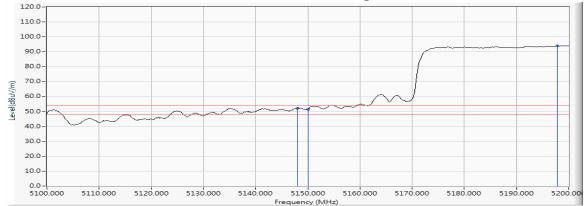
Figure Channel 42:







Vertical (Average)

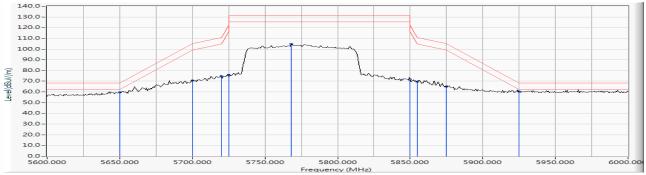


- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 3kHz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

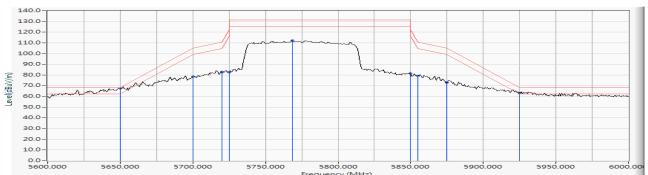


Product	:	G.hn Powerline Wireless Extender
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/10
Test Mode	:	Mode 4 Transmit (802.11ac-80BW-65Mbps)-Channel 155

RF Radiated Measurement:



	Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Decult
	(MHz)	(dB)	(dBµV)	$(dB\mu V/m)$	(dB)	(dBµV /m)	Result
Horizontal	5650.000	18.483	41.055	59.537	-8.683	68.220	Pass
Horizontal	5700.000	18.632	51.978	70.610	-34.590	105.200	Pass
Horizontal	5720.000	18.693	55.900	74.593	-36.207	110.800	Pass
Horizontal	5725.000	18.711	56.694	75.405	-46.795	122.200	Pass
Horizontal	5768.116	18.844	85.842	104.686			
Horizontal	5850.000	19.103	52.645	71.748	-50.452	122.200	Pass
Horizontal	5855.000	19.115	50.182	69.298	-41.502	110.800	Pass
Horizontal	5875.000	19.177	45.849	65.026	-40.174	105.200	Pass
Horizontal	5925.000	19.333	41.062	60.394	-7.806	68.200	Pass



	Frequency	Correct Factor		Measure Level	Margin	Limit	Descult
	(MHz)	(dB)	(dBµV)	$(dB\mu V/m)$	(dB)	(dBµV /m)	Result
Vertical	5650.000	18.483	48.943	67.425	-0.795	68.220	Pass
Vertical	5700.000	18.632	59.800	78.432	-26.768	105.200	Pass
Vertical	5720.000	18.693	64.426	83.119	-27.681	110.800	Pass
Vertical	5725.000	18.711	63.927	82.638	-39.562	122.200	Pass
Vertical	5768.696	18.846	93.479	112.325			
Vertical	5850.000	19.103	62.316	81.419	-40.781	122.200	Pass
Vertical	5855.000	19.115	60.121	79.237	-31.563	110.800	Pass
Vertical	5875.000	19.177	53.620	72.797	-32.403	105.200	Pass
Vertical	5925.000	19.333	43.907	63.239	-4.961	68.200	Pass



Product	:	Ghn Powerline Wireless Extender
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/10
Test Mode	:	Mode 1: Transmit (802.11a-6Mbps) (5240MHz)

Chain	Test Frequency	Measurement Level (20dB BW)	Limit	Result
	(MHz)	(MHz)	(MHz)	
А	5240	5249.24	<5250	PASS
В	5240	5249.19	<5250	PASS

NOTE: Accordance with 15.215 requirement.

Ref Level Att 5GL	21.00 dBm 30 dB		RBW 1 MH2 VBW 3 MHz M	Mode Sweep			(W
• 1Pk Max							
10 dBm		T	****	MI[1] Occ Bw	W.	5.23	17.80 dBn 54050 GH 18382 MH
0 dBm					Withen	-Brite	
-10 dBm	No Maria				Wither	Weer way	TALAL
-30 dBm	_				_		
-40 dBm	-		-	-	-		
-Sű dám	_					-	-
-60 dBm		-	-		-		-
-70 dBm	-		-		-	-	_
CF 5.24 GH	z		1001 pt	5	-	Span	50.0 MHz
Marker	1.2.1				6.1		
Type Ref	Trc	X-value 5.235405 GHz	Y-value 17.80 dBm	Function	Function Result		12
TI	1	5.2308591 GHz	7.18 dBm	OCC BW		18,3816	18392 MHz

Date 11 JUL 2017 19 02:00

Chain B

SGL	-	-										
10 dBm				TY C	× MI		OCE BW			18.25 dBn 5.2353550 GH 18.331668332 MH		
0 dBm-	ant			(headyling	aller	-		
-10 dan	, MUA	Wheel		_			_		- KAN	White has		
-30 dBm					-			-		_		
40 dBn					-			-		-		
-SO dan			_		-		-	-		-		
-60 dBn	+			-	-	-	-			-		
-70 dBn	-	_	_			-	-	-		-		
CF 5.2	4 GHz	-		-	1001 p	ts	-	1	Span	50.0 MHz		
larker		See	-	- ×	0.7.07					_		
Type M1	Ref	Trc	X-value		Y-value 19.25 dBm	Functi	an	Function Result				
T1		1	5.235355 GHz 5.2308591 GHz		6.44 dBm	(ic)	Bw		18.3316	58332 MHz		
12		1	5.249190		7.88 dBm		OCC BW					



Product	:	G.hn Powerline Wireless Extender
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/10
Test Mode	:	Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5240MHz)

Chain	Test Frequency	Measurement Level (20dB BW)	Limit	Result
	(MHz)	(MHz)	(MHz)	
А	5240	5249.59	<5250	PASS
В	5240	5249.54	<5250	PASS

NOTE: Accordance with 15.215 requirement.

	1 21.00 dB/ 30 d			tode Sweep	-	, E	
●1Pk Max				M1[1]			
10 dBm		J.		V2	16.61 dBn 5.2385510 GH 19.000919081 MH		
0 dêm		- v			trees		
-10 dBm	40						
-30 dBm			-		-		
-40 dBm-	-			-	-	-	
-50 dBm	_			_	-		
-60 dBm				-	-		
-70 dBm	_			_	-		
CF 5.24 GH	łz		1001 pt	\$	1	Span 50.0 MH	
Marker							
Type Ret	Trc	X-value 5.238551 GHz	Y-value 16.61 dBm	Function	Fun	ction Result	
ML T1	1	5.2305095 GHz	5.43 dBm	Occ Bw		19.080919081 MHz	
72	1	5.2495904 GHz	6.05 dBm				

Date: 11 JJL 2017 19 25:33

Chain B

11Pk Ma	N										
10 dBm-				W.	¥.N1		1[1] cc Bw	(2) V.	16.95 dBn 5.2386510 GH 19.030969031 MH		
0 dBm—		10	- us	1			1	lin	·Labortuge	1	
-10 dBm	4								- a anti-fra	3 mil	
-30 dBm	-			-	-	-	-	-	-	-	
40 dBm	-				+ +		-	-			
50 dBm	+			-	-			-		-	
60 dBm	+		-		-			-			
-70 dBm	+			-		-		-		-	
CF 5.24	GHZ	-	-		1001 1	its	-	-	Span	50.0 MHz	
tarker		-	0.04		10.00	1.1.2.1	(T) (1)		10202		
Type	Ref	Trc	X-value 5.2386		Y-value 16.95 dBm	Func	tion	Func	Function Result		
T1 T2		1	5.23050		5.85 dBm 5.51 dBm		cć Bw		19.0309	69031 MHs	



Product	:	G.hn Powerline Wireless Extender
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/10
Test Mode	:	Mode 3: Transmit (802.11n-40BW 30Mbps) (5230MHz)

Chain	Test Frequency	Measurement Level (20dB BW)	Limit	Result
	(MHz)	(MHz)	(MHz)	
А	5230	5248.28	<5250	PASS
В	5230	5248.58	<5250	PASS

NOTE: Accordance with 15.215 requirement.

Chain A

						_					
●1Pk M	9K	_			MI	_	M	1[1]	_		13.29 dBn
1000	- 1-			1	MI MILI						84000 GH
10 dBm				4	-	Oce Bw		2	36.463536464 MHz		
				1					1		
0 dBm-				/					4		
10.450				1			_		1		_
		HUNTH	houselle						Likam	American	
-20 dBm	and the	A - 14	nonadia		-	_	_	-		Amondary A	And
porter											martin
-30 dBn	-		-		-	-			-		
1.0											
-40 dBa							-	2			
-50 dBr	-						_			1 1	
-30 una			1						-	· · · · · · · · · · · · · · · · · · ·	
-60 dBr	-			-	-	-	_	-	-		-
									1		
-70 dBn	+				-	-	-	-	-		-
	100		A		1			· · · · · · · · · · · · · · · · · · ·	1	1.000	
CF 5.2	3 GHz	<u> </u>	0		1001	pts				Span	100.0 MHz
Marker						-					
Type	Ref	Trc	X-value		Y-value	-	Fund	tion	Fun	ction Result	
ML	-	1		34 GH2	13.29 dB					-	
71		1	5.21101		6.32 dB 5.97 dB		0	Occ BW		30.4635	36464 MHz

Date 11 JUL 2017 19:37 16

Chain B

SGL 1Pk Max			Series						_	
TTE ITER		1		-	M		15.31 dBm			
10 dBm	-		¥	the second se		a: Biv	2	5.2285000 GHz 36.963036963 MHz		
0 dBm		Jun I	/				then	1	1	
No Here	-lynn ann	No.						any and	mo	
-30 dem	_					-	-	-		
-40 dBm	_		_		_		-	-	-	
-50 d8m	_			-		-	-			
-60 dBm		-								
-70 d8m			-		-					
CF 5.23 GH	2	· · · · · · ·		1001 p	ots	-	-	Span	100.0 MH2	
farker Type Ref	Trc X-value			Y-value	Function			unction Result		
M1 71 72	1 1	5.228 5.211618 5.248581		15,91 dBm 6.64 dBm 6.32 dBm	Ŭ.	ić Bw	_	36.9630	36963 MHs	



Product	:	G.hn Powerline Wireless Extender
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2017/07/10
Test Mode	:	Mode 4 Transmit (802.11ac-80BW-65Mbps) (5210MHz)

Chain	Test Frequency	Test Frequency Measurement Level (20dB BW)		Result
	(MHz)	(MHz)	(MHz)	
А	5210	5248.36	<5250	PASS
В	5210	5248.16	<5250	PASS

NOTE: Accordance with 15.215 requirement.

Chain A

Att. 5GL	21.00 dBn 30 dB			VBW 3 MHz	Mode	Sweep	-		
●1Pk Max				-					-
10 d8m-			mint	MI		M1[1]	-		13.70 dBr 203410 GH 177123 MH
			Ý			Jun	Y	11.11220	1 reas min
0 dBm	1.	inner				1	Lama		
-10 dBm 1/~/~/ 90 dBm	hip - Joshunger							punnu	munit
-30 dBm			_		-	-	-		
-40 dBm	-				-		-		
-50 dBm	_	-		-	_		-		
-60 dBm-					_	-	-	-	
-70 dBm	-			+ +	-		-	-	-
CF 5.21 GH	12			1001	pts		-	Span	200.0 MHz
Marker	and the second second								
Type Rei	Trc	X-value		Y-value		Inction	Fun	ction Resul	t
M1 71	1	5.2034					17 1000	77123 MHz	
72	1	5.24836		3.70 dBm		Out DW		-1-4665	a shed mite

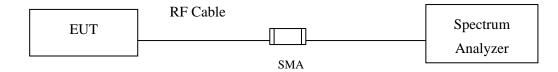
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Chain B

1 1Pk Max						_			_
10 d5m			mak	Mi		M1[1]		13. 5.2034	
		1	\$	Toronto a	Occ	BW	Ŷ.	76.5234	76523 MH
0 dBm		1	1			_	1	1	1
-10 d8m	1.00	way managements					hinking	an and a second of the	-
Anoni	1 martin	1000						and a land the land	in and
NO DEM									A CONTRACT
-30 dem-		-					-		1
-40 dBm			-				1	-	
-50 d8m							-		
-60 dBm					-		-	-	_
-70 dBm-									
-70 dem-			-						
CF 5.21 GH	tz	-		1001 p	its		-	Span 2	00.0 MHz
farker									
Type Re		x-value		Y-value	Functio	on	Fun	ction Result	
MI	1		41 GHz	13.26 dBm		-		-	
T1 T2	1	5.1716		4.00 dBm 4.80 dBm		BW		16.5234	6523 MHs

7. Occupied Bandwidth

7.1. Test Setup



7.2. Limits

For the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz

7.3. .Test Procedure

The EUT was setup to ANSI C63.10, 2013; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

7.4. Uncertainty

±671.83Hz

7.5. Test Result of Occupied Bandwidth

Product	:	Ghn Powerline Wireless Extender
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11a-6Mbps) (5745MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
149	5745.00	18480	>500	Pass

Att		30 di	SWT	1.1 ms =	VBW 300 kHz	Mode Sweep		
1Pk Va	W				_			
10 dBm-		1 3 5 20 8	D	Ma 1		M1[1]	мз	9,52 dB/ 5,7475470 GH 2,99 dB/ 5,7371000 GH
0 dBm-	0	1 3-320 0	15m	1.00			1	
-10 dBm		_		1			1	
-20 d5m	+	will	Uningh	(m			Mumanundu	wanter resources
-30 dem	10th	press					_	Westersterster Win
-40 dBm	+			-				
-50 dBm	+				++			
-60 dBm	+				++			
-70 dBm	+				+ +			
CF 5.74	IS GH	Iz			1001 ;	pts		Span 50.0 MHz
Marker		- I				1		
Type M1	Ref	Trc 1	X-value 5.7475		Y-value 9.52 dBm	Function	Fun	ction Result
M2		1	5.73	71 GHz	2.99 dBm	1		
M3		1	5.753	25 GHz	1.02 dBm	1		

Figure Channel 149: (Chain A)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
149	5745.00	19430	>500	Pass

Figure Channel 149: (Chain B)

Att	_	30 0	B SWT	7-1 IIIA 📾	VBW 300 kH	£	Mode Sweep	_			
10 dBm				13 1	M2	ut	M1[1]	a		5.74	11,44 dBn 38010 GH 5,14 dBn
0 dBm-	1	5.440	dBm	Partito	and the state of t	1	and the second sec	1	a	5.73	72500 GH
		-		1				1			
10 dBm	-		numunhavial	J.		_		4	muniquesta		
			in when and	UN4					Mr. Hickory	C . C	
20 dBm	-	Anna	autor in the		-	-		-	- To-JON	Pentos Vitrau	
- til	Unt-	W.W.					1.1			A.40*	Washer
Annaeu	-							-			Aller
40 dBm						-					
50 dBm	-										
-60 dBm	-										
					1 1						
-70 dBrr	`†										
CF 5.7	45 GI	Hz			1001	pts				Span	50.0 MHz
1arker											
Туре	Ref		X-value		Y-value	_	Function		Fund	tion Result	
M1 M2		1	5.7438		11.44 dB 5.14 dB			-			
M2 M3		1		25 GHz 27 GHz	5.14 dB 4.69 dB			-			



Product	:	G.hn Powerline Wireless Extender
Test Item	:	Occupied Bandwidth Data
Test Site		No 3 OATS

Test Site	:	No.3 OATS

Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5785MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
157	5785.00	18630	>500	Pass

Att	-	50	dB SWT	4, 4 102	VBW 300 kH	EMOG	e Sweep				
• THE M	ew				Mi		M1[1]	-	_	5.7	9.74 dBn 837510 GH
10 d8m	- I.I.	1 3,740	1 dan	Ma		adjudy	M2[1]	13			3.59 dBn 772500 GH
0 dBm-	-	1 3,740	ubm-	- Pear			Chi - i - o - frame	11	-		
-10 dBn		_		1			-	1			-
-20 dBn	5-		Longhania	AN .			-	Way	"Andta.to		and the work in
30 dPm	. Marine	probably the start	Mana							Muniking the	Million
WHY A	WF-				-	-	1				L'ANNY IN
40 dBn		_	-		-	-	-	-		-	
-50 dBn	+		_								
-60 dBn	+						_	_			
-70 dBn	-						_	_			
CF 5.7		1.2			1001	nte					n 50.0 MHz
darker	65 GF	12			1001	prs				sha	1 30.0 MHz
Type	Ref	Trc	X-valu	le	Y-value	Fu	nction		Fund	tion Resul	t
M1		1		751 GHz	9.74 dB						-
M2		1	5.77	725 GHz	3.59 dB	m					
M3		1		325 GHz	1.81 dB	m					

Figure Channel 157: (Chain A)

Date: 11.JUL.2017 19:44:45

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
157	5785.00	19330	>500	Pass

Figure Channel 157: (Chain B)

Att	-	30 d	3 SWT	1.1 ms .	VBW 300 KH	2	Mode Sweep			
1Pk Vie 10 dBm—		1 5.220 c	þm	Ma	MI home bookship	يلم	M1[1]			11.22 dBn 337510 GH 4.30 dBn 771000 GH
0 dBm			woodrawi	w				www.manmanda	in Ar	
AD dBm-	Ne ANY	you and	and and a second					an Marina Manada	anostyler W	and the states
-50 dBm-										
-70 dBm-										
CF 5.78	5 GH	z			1001	pts			Spar	50.0 MHz
Marker Type Ref M1 M2		Trc 1			Y-value 11.22 dBn 4.30 dBn 4.38 dBn	m	Function	Fun	ction Resul	t



Product	:	G.hn Powerline Wireless Extender
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
T. A.M. J.		$M_{2} = 1 + T_{2} + (0.02 + 11 + (M_{1} + 1)) (5.025) MIL$

Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5825MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
165	5825.00	18630	>500	Pass

	ew								
10 d8m	1. L	1 3.470	dBm	M21 1	M1	M1[1]	43		9.47 dBn 38010 GH 1.64 dBn 68500 GH
0 dBm-	-	1 31470	- Contraction	1	1 1		11	1	
-10 dBn		-	-	J		-	1	-	_
-20 dBn	-	In	The Aut	- Tha			Murduger	way will a	-
30 dBH	April	MM	The share	-			-	have with here is a	Whether
40 dBn	-		-	-	-			-	19th
-50 dBn	+								
-60 dBn	+								
-70 dBn	-								
CF 5.8	25 GH	z			1001 (ots		Span	50.0 MHz
Marker	Def	Trc	X-val		Y-value	Function	1 50	nction Result	
Type M1	Ret	1		1801 GHz	9.47 dBm		Fu	nction Result	
M2		1		685 GHz	1.64 dBm				
M3		1	5	833 GHz	2.95 dBm				

Figure Channel 165: (Chain A)

Date: 11.JUL.2017 19:54:27

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
165	5825.00	18680	>500	Pass

Figure Channel 165: (Chain B)

	€₩.					-						
10 dBm	n			Malut	M2	pul	M1[1]	N3		10.24 dBr 5.8238010 GH 2.34 dBr 5.8168500 GH		
0 dBm-		1.5		1		ľ		1				
-10 dBn	-	-		J.M				1	har		<u> </u>	
-20 dBn		un and the	mann						T The Designation	humbly	Als.	
ANN ANN	WALL .										transfell w	
-40 dBm	+					-						
-50 dBrr	+					-						
-60 dBm	+					-						
-70 dBrr	+					-						
CF 5.8	25 GH	Iz			1001	l pts	;			Span	50.0 MHz	
Marker	Pof	Trc	X-value		Y-value	1	Function	1	Eun	ction Result		
Type M1	Kel	1	5.8238		10.24 dB	m	Function	-	Fun	cion Result		
M2		1		85 GHz	2.34 dB			-				
M3		1		27 GHz	3.82 dB							



Product : G.hn Powerline Wireless Ext	ender
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Test Item	:	Occupied Bandwidth Data
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Test Site : No.3 OATS

Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5745MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
149	5745.00	19830	>500	Pass

			5 - X - X - X - X - X - X - X - X - X -		VBW 300 kH		Mode S	tweek.			
• 19k Vi 10 d8m				M2 La	mutarter	nul	M	SFT1	43		8.94 dBn 00450 GH 1.98 dBn 64500 GH
0 dBm-	0	1 2,940	dBm	- Maria	California de la california	1	Sector 14		1	1	
-10 dBn		_	-	1		-	_		V		
-20 den -30 den	Auge	rtr MM Wall	WWWHOWAH	2					Solonallita	Rubridsengy	whenter !
-40 dBn				-		-	-				
-50 dBn	+										
-60 dBn	+					-					
-70 dBn	+										
CF 5.7	45 GH	Iz		1	1001	L pts	5			 Span	50.0 MHz
Marker											
Туре	Ref		X-value		Y-value	_	Func	ion	Fun	ction Result	
M1 M2	_	1	5.7500		8.94 dB						
M2 M3		1		45 GHz 85 GHz	1.98 dB 2.43 dB						

Figure Channel 149: (Chain A)

Date: 11.JUL.2017 20:00:31

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
149	5745.00	26470	>500	Pass

Figure Channel 149: (Chain B)

10 dBm M1[1] 5.75004 0 dBm 01 5 270 dBm M2 14 143 3.9 -10 dBm 5.736451 3.9 3.9 -10 dBm -10 dBm -10 dBm -10 dBm -10 dBm -20 dBm/mm/m/m/m/m/m/m/m/m/m/m/m/m/m/m/m/m/m			e Sweep		1011 200 11	1.1 ms =			dilui.	DIPK VI
-10 dBm -20 dBm/m/m/m/m/m/m/m/m/m/m/m/m/m/m/m/m/m/m/	11.27 dBn 5.7500450 GH 3.91 dBn 5.7364500 GH		M1[1] TM2[1] 1M3	yeste	logenlarhashin	M2 Jur	dām	1 5.270 d		10 dBm
-40 dBm -50 dBm -60 dBm -70 dBm -70 dBm -70 dBm -77			1	Ť		11				a dam-
40 dBm 40 dBm -50 dBm -50 dBm -60 dBm -60 dBm -70 dBm -60 dBm -70 dBm -60 dBm -70 dBm -60 dBm -70 dBm -70 dBm	Manaylalan	Man Alpan Suran				Nata	pullum and	admit	·	10 dBn
.40 dBm	and the stand of the stand							Menthese	Strantis	-20 dBn
-60 dBm				-						
70 dBm				+		+				-50 dBm
CF 5.745 GHz 1001 pts Span 50.0 Narker Type Ref Trc X-value Y-value Function Function Result				+					~+	-60 dBm
1arker Type Ref Trc X-value Y-value Function Function Result				+					+	-70 dBm
Type Ref Trc X-value Y-value Function Function Result	Span 50.0 MHz		1	1 pts	1001	1		z	45 GH	CF 5.7
M1 1 5.750045 GHz 11.27 dBm	unction Result	Func	unction	Bm					Ref	
M2 1 5.73645 GHz 3.91 dBm										



Product	:	G.hn Powerline Wireless Extender	

Test Item	•	Occupied Bandwidth Data
rest nem	•	Occupica Danawiani Dana

Test Site	:	No.3 OATS

Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5785MHz)

Channel No. Frequency		Measurement Level	Required Limit	Result	
(MHz)		(kHz)	(kHz)		
157	5785.00	19980	>500	Pass	

D1Pk Vi	ew										
10 d8m-	·	01 3,600	dBm	Malin	MI Markedraha	peter	M1[1]	13			9.60 dBn 38010 GH 2.17 dBn 68500 GH
-10 dBm				1		-		Y		-	
-20 dBn -39 dBn	Aled	Medenthan Mart	Malenauproveda						ⁿ denoralityta,	-uniterrane	William March
40 dBm		_	-	-	-	-	-	-	-		
-50 dBm	-							-			
-60 dBm	-					-		-			
-70 dBm	-					-	_	+			
CF 5.7	85 G	Hz			1001	l pts				Span	50.0 MHz
/larker											
Type	Re	f Trc	X-valu		Y-value		Function		Fund	tion Result	
M1		1		801 GHz	9.60 dB						
M2 M3		1		685 GHz 345 GHz	2.17 dB 3.56 dB						

Figure Channel 157: (Chain A)

Date: 11.JUL.2017 20:03:58

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
157	5785.00	21930	>500	Pass

Figure Channel 157: (Chain B)

Wile			dB SWT	TTT HIS I	VBW 300 kH	E N	tode Sweep			
10 dBm	1	1 4.590	dBm	Marken .	MI	perter	MILIJ	4		10.59 dBn 938010 GH 4.56 dBn 769000 GH
-0.45-	·			1				Manalach		
Aquudh		welling the	W Hartenstort					Withington,	T-AMAYWA-YA	Marillerantional
-50 dBn	-									
-60 dBn -70 dBn										
CF 5.7	85 GH	Iz	1	1	1001	pts			Spar	n 50.0 MHz
1arker Type	Ref	Trc	X-value		Y-value		Function	Fun	ction Resul	t
M1 M2 M3		1 1		59 GHz 93 GHz	10.59 dB 4.56 dB 3.63 dB	m				



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Test Site : No.3 OATS

Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps) (5825MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
165	5825.00	19430	>500	Pass

1 Spectrum X 100 Ref Level 21.00 dam Offset 1.00 dB = RBW 100 kHz SWT 1.1 ms = VBW 300 kHz 30 dB Att Mode Sweep 1Pk View 9.01 dBm 5.8275470 GHz 2.94 dBm 5.8166000 GHz M1[1] 141 10 d8m hal M2[1] M3 M2 Laborantersheld D1 3.010 d 0 dBm 10 dBn normalistan rollinghamode all species -20 dBn whinter In Asst 30 dand 40 dB -50 dBm -60 dBm -70 dBm Span 50.0 MHz CF 5.825 GH 1001 pts larker X-value 5.827547 GHz 5.8166 GHz 5.8335 GHz 9.01 dBm 2.94 dBm 2.35 dBm Type Ref Trc 1 Function Function Result M2 M3 III 499

Figure Channel 165: (Chain A)

Date: 11.JUL.2017 20:08:40

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
165	5825.00	21930	>500	Pass

Figure Channel 165: (Chain B)

2Pk VI	ALL A					-	ode Sweep			
10 dBm-		1 4.630	dBm-	Malul	M1	putro	M1[1]	1	5.82	10.63 dBn 38010 GH 3.52 dBn 68500 GH
1.5	-		والمراجع والمعالية والمراجع	/				Munulinhar	A	
		phanedry	Handren and Murch				-	Anterneterstar		halfullingule
-40 dBm -50 dBm										
-60 dBm -70 dBm										
CF 5.8	25 GF	Iz			1001	pts			Span	50.0 MHz
1arker Type	Rof	Trc	X-value	. 1	Y-value	1	Function	Eupo	tion Result	
M1 M2 M3		1 1	5.8238 5.816		10.63 dB 3.52 dB 3.76 dB	m		run	Alon Result	



Product : G.hn Powerline Wireless Extended
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Test Item : Occupied Band	lwidth Data
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Test Site	:	No.3 OATS

Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5755MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
151	5755.00	36860	>500	Pass

1Pk Vi	ew									
10 d8m		1 0.770 c		MELIN	بالللل	M1 M	M1[1] M1_M2[1] Walkhand (1.11.11/13)			6.77 dBn 00900 GH -0.52 dBn 74000 GH
0.08m-	-0	1 0,770.0	BIN	1			- non			
-10 dBn		-	-	1		4				
-20 dBn				/						
-20.080		vi cultor	ALL TOP AND A CONTRACTOR	11 11 1			1.1.1	Winterstery	humanim Anderse	
-30 dBr	1,000	W MARINE	all's	-			-	-	a and the	through .
							_			man
-40 dBn	1		-	-				-		
-50 dBn	-									
-60 dBn	<u>+</u>									
-70 dBn										
-70 aBn	' 									
CF 5.7	55 GH	z			1001	pts			Span 1	00.0 MHz
Marker										
Type	Ref	Trc	X-value		Y-value	Func	tion	Fun	ction Result	
M1		1	5.7600		6.77 dB					
M2 M3		1		74 GHz 29 GHz	-0.52 dB 0.34 dB					

Figure Channel 151: (Chain A)

Date: 11.JUL.2017 20:11:23

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
151	5755.00	38260	>500	Pass

Figure Channel 151: (Chain B)

		30 0	8 SWT	2 102 10	VBW 300 kH	£	Mode Sweep			_
10 dBm				Maliai	M2	-	M1[1]	12		8.80 dBn 01000 GH 1.98 dBn
0 dBm-	0	1 2.800	dBm	fichilde	- Marine	1 mar	-and the stand and the stand	1	5.73	74000 GH
-10 dBn				<u> </u>	1111	1		1		
-20 dBn			al detroited by	/	_		_	San Aling Andrews	man	
山北	-srew	Whyther	mlefterstander der der der der der der der der der					Jern Multiples	a. and Junya	wanterst
-40 dBn										
50 dBn	+									
-60 dBn	~+									
-70 dBn	+							_		
CF 5.7	55 GF	iz			1001	pts			Span :	 100.0 MHz
1arker										
Type M1	Ref	Trc	X-value	01 GHz	Y-value 8.80 de		Function	Fun	ction Result	:
M1 M2		1		74 GHz	1.98 dB					
M3		1		27 GHz	1.19 de					



Product	:	G.hn Powerline Wireless Extender	

- Test Item : Occupied Bandwidth Data
- Test Site : No.3 OATS

Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5795MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
159	5795.00	37160	>500	Pass

DIPK VI	aw.									
10 d8m-		1 0.980 (la c	MELLUL	alifetetete		2[1] 2[1]	3		6.98 dBn 00900 GH -0.33 dBn 74000 GH
0 dem-	-	1 0.300 (1		1				
-10 dBm	-		-	1		Y	-			
2.2.				/				V		
-20 dBm	-	i du	Monthernetication	1				Per Mary Com	North Contraction	
30 de	1 des	An Alarus	W. A					1	a we want of the	Hundred
WATHPATO								1		Arne
40 dBm	-			-	-		-	-	-	
-50 dBm	+									
-60 dBm										
-00 001										
-70 dBm	+									
CF 5.79 Aarker	75 GF	12			1001	l pts			span i	00.0 MHz
Type	Ref	Trc	X-value		Y-value	Func	tion	Eup	ction Result	
M1	KOI	1		09 GHz	6.98 dE			run	Laton Result	
M2		1		74 GHz	-0.33 dE					
M3		1	5.81	27 GHz	-0.53 dE	3m				

Figure Channel 159: (Chain A)

Date: 11.JUL.2017 20:14:26

Channel No. Frequency		Measurement Level	Required Limit	Result
(MHz)		(kHz)	(kHz)	
159	5795.00	37860	>500	Pass

Figure Channel 159: (Chain B)

DIPK VI	aw.				VBW 300 kH	-	tode Sweep			
10 dBm		1 2,340	doe	MELLUN	MI	mell	M1[1]	M3		8.34 dBm 01000 GH: 1.26 dBm 74000 GH:
0 dam-	-	1 2.340	dBm	1.000	1		and another	-	1	10000000
-10 dBn)		-		A		
-20 dBn	1	(und the state	In plainten and		1	-		And the start	Station have	1
apple list	An	HALL &	militarianteration	_		-	_	_	near the stand	to de hand hand hand
-40 dBn	+					-				
-50 dBn	+					-				
-60 dBn	+					-				
-70 dBn	+					-				
CF 5.7	95 GF	łz			100	l pts			Span	 100.0 MHz
Marker										
Type M1	Ref	Trc 1	X-value	D1 GHz	Y-value 8.34 de	200	Function	Fun	ction Result	t
M1 M2		1		74 GHz	1.26 dB					
M3		1		27 GHz	0.69 dt					



Product	:	G.hn Powerline Wireless Extender	

- Test Item : Occupied Bandwidth Data
- Test Site : No.3 OATS
- Test Mode : Mode 4 Transmit (802.11ac-80BW-65Mbps) (5775MHz)

Channel No. Frequency		Measurement Level	Required Limit	Result
(MHz)		(kHz)	(kHz)	
155	5775.00	75300	>500	Pass

e 1Pk Vi	we									
10 d8m-		2.0.280	an hild due	۸ اول ال	Luning		11[1] 12[1] 42[1]	ليلللهم		5.72 dBn 701000 GH -3.73 dBn 374000 GH
-10 dBm	p.					-		-	1	4 cont
henvelsk	Maren -		1				1	1.1	1	Month until pu
30 dBm	-					-				
-40 dBm	-		-		-	-	-		-	
-50 dBm	+						-	-		
-60 dBm	+						-	-		
-70 dBm	+							-		
CF 5.7	5 GH	z			1001	pts	1		Span	100.0 MHz
Marker	D -61	Tral	w		Marchan	1.5		F	-tion Doord	
Type M1	Ref	1	X-value	01 GHz	Y-value 5.72 dB		ction	Fun	ction Resu	t
M2		1		74 GHz	-3.73 dB					
M3		1		27 GHz	-1.41 dB					

Figure Channel 155: (Chain A)

Date: 11.JUL.2017 19:57:38

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
155	5775.00	75300	>500	Pass

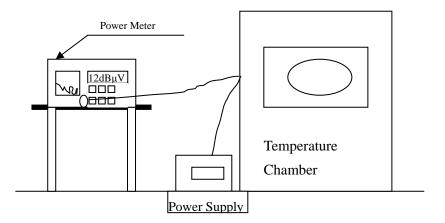
Figure Channel 155: (Chain B)

DIPK VI	dilu/	30 0	8 SWT	2 1112 11	BW 300 kHz	Mode	Sweep			
10 dBm 0 dBm⊨		₩2111.1	dBmbl bille	الملللم	ullla,		n[1] 2[1] 4.1.1.1.1	had - (1)) ;		5,14 dBm 788000 GH; -3.81 dBm 374000 GH;
-10 dBm		10.000	Commenter		V			Bede C analytic	- Sugard	
-10 000									1	
副曲	Ward.						1		1	State AND A
-30 dBm			-		-	_	-		-	
-40 dBm	+									
-50 dBm	-									
-60 dBm	+							_		
-70 dBm	+							_		
CF 5.7	75 GH	Iz			1001	ots			Span	100.0 MHz
Marker Type	Pof	Trol	X-value		Y-value	Fund	tion 1	E	nction Resu	1+
M1	Ker	1		38 GHz	5.14 dBm		aion	Fui	iccion kesu	n.
		1		74 GHz	-3.81 dBm					



8. Frequency Stability

8.1. Test Setup



8.2. Limits

Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified

8.3. Test Procedure

The EUT was setup to ANSI C63.10, 2013; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

8.4. Uncertainty

±671.83Hz



8.5. Test Result of Frequency Stability

Product	:	G.hn Powerline Wireless Extender
Test Item	:	Frequency Stability
Test Site	:	Temperature Chamber
Test Date	:	2017/07/20
Test Mode	:	Carrier Wave

Chain A

Test Co	onditions	Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
		36	5180.0000	5180.0011	-0.0011
		38	5190.0000	5190.0036	-0.0036
		44	5220.0000	5220.0046	-0.0046
		46	5230.0000	5230.0085	-0.0085
Tnom (20) oC	Vnom (120)V	48	5240.0000	5240.0002	-0.0002
1110111 (20) OC	v IIOIII (120) v	149	5745.0000	5745.0074	-0.0074
		151	5755.0000	5755.0115	-0.0115
		155	5785.0000	5785.0136	-0.0136
		157	5795.0000	5795.0075	-0.0075
		159	5825.0000	5825.0077	-0.0077
Test Co	onditions	Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
		36	5180.0000	5180.0051	-0.0051
		38	5190.0000	5190.0109	-0.0109
		44	5220.0000	5220.0066	-0.0066
		46	5230.0000	5230.0014	-0.0014
Tnom (50) oC	Vnom (138)V	48	5240.0000	5240.0067	-0.0067
1 nom (30) oc	v IIOIII (138) v	149	5745.0000	5745.0069	-0.0069
		151	5755.0000	5755.0058	-0.0058
		155	5785.0000	5785.0072	-0.0072
		157	5795.0000	5795.0034	-0.0034
		159	5825.0000	5825.0052	-0.0052



Test Co	onditions	Channel	Frequency (MHz)	Frequency (MHz)	∆F (MHz)
		36	5180.0000	5180.0047	-0.0047
		38	5190.0000	5190.0052	-0.0052
		44	5220.0000	5220.0101	-0.0101
		46	5230.0000	5230.0068	-0.0068
		48	5240.0000	5240.0039	-0.0039
Tnom (50) oC	Vnom (102)V	149	5745.0000	5745.0056	-0.0056
		151	5755.0000	5755.0016	-0.0016
		155	5785.0000	5785.0077	-0.0077
		157	5795.0000	5795.0046	-0.0046
		159	5825.0000	5825.0024	-0.0024
Test Co	onditions	Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
		36	5180.0000	5180.0041	-0.0041
	Vnom (138)V	38	5190.0000	5190.0036	-0.0036
		44	5220.0000	5220.0043	-0.0043
		46	5230.0000	5230.0074	-0.0074
		48	5240.0000	5240.0042	-0.0042
Tnom (-20) oC		149	5745.0000	5745.0033	-0.0033
		151	5755.0000	5755.0091	-0.0091
		155	5785.0000	5785.0019	-0.0019
		157	5795.0000	5795.0092	-0.0092
		159	5825.0000	5825.0097	-0.0097
Test Co	onditions	Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
		36	5180.0000	5180.0041	-0.0041
		38	5190.0000	5190.0036	-0.0036
		44	5220.0000	5220.0043	-0.0043
		46	5230.0000	5230.0074	-0.0074
		48	5240.0000	5240.0042	-0.0042
Tnom (-20) oC	Vnom (102)V	149	5745.0000	5745.0033	-0.0033
		151	5755.0000	5755.0091	-0.0091
		155	5785.0000	5785.0019	-0.0019
		157	5795.0000	5795.0092	-0.0092
		159	5825.0000	5825.0097	-0.0097



Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
T (20) 0C		42	5210.0000	5210.0032	-0.0032
Tnom (20) °C	Vnom (120)V	155	5775.0000	5775.0031	-0.0031
Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
T (50) 0G		42	5210.0000	5210.0074	-0.0074
Tmax (50) °C	Vmax (138)V	155	5775.0000	5775.0055	-0.0055
Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
T. (50) 0G		42	5210.0000	5210.0038	-0.0038
Tmax (50) °C	Vmin (102)V	155	5775.0000	5775.0019	-0.0019
Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
		42	5210.0000	5210.0036	-0.0036
Tmax (-20) °C	Vmax (138)V	155	5775.0000	5775.0011	-0.0011
Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
T (20) %		42	5210.0000	5210.0085	-0.0085
Tmax (-20) °C	Vmin (102)V	155	5775.0000	5775.0046	-0.0046



Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
Tnom (20) oC	Vnom (120)V	36	5180.0000	5180.0021	-0.0021
		38	5190.0000	5190.0073	-0.0073
		44	5220.0000	5220.0102	-0.0102
		46	5230.0000	5230.0082	-0.0082
		48	5240.0000	5240.0082	-0.0082
		149	5745.0000	5745.0012	-0.0012
		151	5755.0000	5755.0074	-0.0074
		155	5785.0000	5785.0041	-0.0041
		157	5795.0000	5795.0036	-0.0036
		159	5825.0000	5825.0010	-0.0010
Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
Tnom (50) oC	Vnom (138)V	36	5180.0000	5180.0057	-0.0057
		38	5190.0000	5190.0046	-0.0046
		44	5220.0000	5220.0067	-0.0067
		46	5230.0000	5230.0430	-0.0430
		48	5240.0000	5240.0086	-0.0086
		149	5745.0000	5745.0076	-0.0076
		151	5755.0000	5755.0055	-0.0055
		155	5785.0000	5785.0012	-0.0012
		157	5795.0000	5795.0033	-0.0033
		159	5825.0000	5825.0021	-0.0021



Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
Tnom (50) oC	Vnom (102)V	36	5180.0000	5180.0051	-0.0051
		38	5190.0000	5190.0022	-0.0022
		44	5220.0000	5220.0021	-0.0021
		46	5230.0000	5230.0136	-0.0136
		48	5240.0000	5240.0035	-0.0035
		149	5745.0000	5745.0082	-0.0082
		151	5755.0000	5755.0027	-0.0027
		155	5785.0000	5785.0042	-0.0042
		157	5795.0000	5795.0008	-0.0008
		159	5825.0000	5825.0014	-0.0014
Test Conditions		Channel	Frequency	Frequency	△F (MHz)
			(MHz)	(MHz)	
	Vnom (138)V	36	5180.0000	5180.0052	-0.0052
		38	5190.0000	5190.0051	-0.0051
		44	5220.0000	5220.0102	-0.0102
		46	5230.0000	5230.0024	-0.0024
		48	5240.0000	5240.0038	-0.0038
Tnom (-20) oC		149	5745.0000	5745.0056	-0.0056
		151	5755.0000	5755.0074	-0.0074
		155	5785.0000	5785.0011	-0.0011
		157	5795.0000	5795.0096	-0.0096
		159	5825.0000	5825.0051	-0.0051
Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
	Vnom (102)V	36	5180.0000	5180.0082	-0.0082
		38	5190.0000	5190.0041	-0.0041
		44	5220.0000	5220.0092	-0.0092
Tnom (-20) oC		46	5230.0000	5230.0010	-0.0010
		48	5240.0000	5240.0101	-0.0101
		149	5745.0000	5745.0069	-0.0069
		151	5755.0000	5755.0089	-0.0089
		155	5785.0000	5785.0054	-0.0054
		157	5795.0000	5795.0025	-0.0025
		159	5825.0000	5825.0051	-0.0051



Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
Tnom (20) °C	Vnom (120)V	42	5210.0000	5210.0063	-0.0063
		155	5775.0000	5775.0083	-0.0083
Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
Tmax (50) °C	Vmax (138)V	42	5210.0000	5210.0043	-0.0043
		155	5775.0000	5775.0089	-0.0089
Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
Tmax (50) °C	Vmin (102)V	42	5210.0000	5210.0019	-0.0019
		155	5775.0000	5775.0048	-0.0048
Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
Tmax (-20) °C	Vmax (138)V	42	5210.0000	5210.0065	-0.0065
		155	5775.0000	5775.0087	-0.0087
Test Conditions			Frequency (MHz)	Frequency (MHz)	△F (MHz)
Tmax (-20) °C	Vmin (102)V	42	5210.0000	5210.0014	-0.0014
		155	5775.0000	5775.0056	-0.0056



9. EMI Reduction Method During Compliance Testing

No modification was made during testing.