

FCC Test Report

Product Name	Wireless Storage Drive		
Model No	WSD-A1		
FCC ID	QT7ASUSWSDA1		

Applicant	Power7 Technology(Dong Guan) Co., Ltd.
Address	No.28 Binjiang Blvd Shishuikou Village, Qiaotou To Dongguan China

Date of Receipt	Aug. 21, 2015
Issued Date	Nov. 26, 2015
Report No.	1580595R-RFUSP05V00
Report Version	V1.0
Hac-MRA Testin	g Laboratory 3023

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.

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Test Report

Issued Date: Nov. 26, 2015 Report No.: 1580595R-RFUSP05V00



Product Name	Wireless Storage Drive				
Applicant	Power7 Technology(Dong Guan) Co., Ltd.				
Address	No.28 Binjiang Blvd Shishuikou Village, Qiaotou To Dongguan China				
Manufacturer	POWER 7 TECHNOLOGY Co.,Ltd.				
Model No.	WSD-A1				
FCC ID.	QT7ASUSWSDA1				
EUT Rated Voltage	DC 3.7V(By Battery), DC 5V(By USB)				
EUT Test Voltage	DC 5V(By USB)				
Trade Name	ASUS				
Applicable Standard	FCC CFR Title 47 Part 15 Subpart E: 2014				
	ANSI C63.4: 2014, ANSI C63.10: 2013				
	789033 D02 General UNII Test Procedures New Rules v01				
Test Result	Complied				

Documented By

:

:

:

Gente Chang

(Senior Adm. Specialist / Genie Chang)

Tested By

Hsu Jac

(Engineer / Jack Hsu)

Approved By

(Director / Vincent Lin)

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Wireless Storage Drive		
Trade Name	ASUS		
FCC ID.	QT7ASUSWSDA1		
Model No.	WSD-A1		
Frequency Range	802.11n-20MHz: 5180-5240MHz, 5745-5825MHz		
	802.11n-40MHz: 5190-5230, 5755-5795MHz		
802.11ac-80MHz: 5210, 5775MHz			
Number of Channels	802.11n-20MHz: 9; 802.11n-40MHz: 4; 802.11ac-80MHz: 2		
Data Rate	802.11n: up to 150Mbps		
	802.11ac-80MHz: up to 433.3MHz		
Channel Control	Auto		
Type of Modulation	802.11n/ac: OFDM, BPSK, QPSK, 16QAM, 64QAM, 256QAM		
Antenna type	PCB Antenna		
Antenna Gain	Refer to the table "Antenna List"		

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	POWER7	N/A	PCB Antenna	0.30 dBi for 5.15~5.25GHz
	TECHNOLOGY(SHEN			1.72dBi For 5.725~5.825GHz
	ZHEN) CO., LTD			

Note: 1. The antenna of EUT is conform to FCC 15.203.

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

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	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:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 38:	5190 MHz	Channel 46:	5230 MHz	Channel 151:	5755 MHz	Channel 159:	5795 MHz

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

ChannelFrequencyChannelFrequencyChannelFrequencyChannel 42:5210 MHzChannel 155:5775 MHzFrequencyFrequency

Note:

- 1. This device is a Wireless Storage Drive with a built-in 2.4GHz and 5GHz WLAN transceiver.
- 2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
- 3. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report. (802.11n-20BW is 7.2Mbps > 802.11n-40BW is 15Mbps and 802.11ac(80M-BW) is 32.5 Mbps)
- 4. 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.

Test Mode	Mode 1: Transmit (802.11n-20BW 7.2Mbps)
	Mode 2: Transmit (802.11n-40BW 15Mbps)
	Mode 3: Transmit (802.11ac-80BW-32.5Mbps)

1.3. Tested System Datails

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

Pro	duct	Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1	Notebook PC	DELL	Latitude E5440	74BTK32	DoC	Non-Shielded, 1.8m
2	Notebook PC	DELL	M65	CG098	DoC	Non-Shielded, 1.8m
3	Fixture	ASUS	N/A	N/A	N/A	N/A

	Signal Cable Type	Signal cable Description			
А	SATA Cable	Non-Shielded, 5.0m			
В	Micro USB to USB Cable	Shielded, 2.3m			

1.4. Configuration of tested System



1.5. EUT Exercise Software

- 1. Setup the EUT as shown in Section 1.4.
- 2. Execute software "QATest MFC Application (v2.0.10.3)" on the EUT.
- 3. Configure the test mode, the test channel, and the data rate.
- 4. Press "OK" to start the continuous Transmit.
- 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 QuieTek Corporation's Web Site : <u>http://www.quietek.com/chinese/about/certificates.aspx?bval=5</u> The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : <u>http://www.quietek.com/</u>

Site Description:	File on Federal Communications Commission FCC Engineering Laboratory 7435 Oakland Mills Road Columbia, MD 21046 Registration Number: 92195
Site Name: Site Address:	Quietek Corporation No.5-22, Ruishukeng, Linkou Dist. New Taipei City 24451, Taiwan, R.O.C. TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789 E-Mail : <u>service@quietek.com</u>

FCC Accreditation Number: TW1014



2. Conducted Emission

2.1. Test Equipment

	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.	Remark					
Х	Test Receiver	R & S	ESCS 30 / 825442/018	Sep., 2015						
Х	Artificial Mains Network	R & S	ENV4200 / 848411/10	Feb., 2015	Peripherals					
Х	LISN	R & S	ESH3-Z5 / 825562/002	Feb., 2015	EUT					
	DC LISN	Schwarzbeck	8226 / 176	Mar., 2015	EUT					
Х	Pulse Limiter	R & S	ESH3-Z2 / 357.8810.52	Feb., 2015						
	No.1 Shielded Room									

Note:

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

2.2. Test Setup



2.3. 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.

2.4. 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 C63.10:2013 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 C63.10, 2013; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

2.5. Uncertainty

± 2.26 dB

2.6. Test Result of Conducted Emission

Product	:	Wireless Storage Drive
Test Item	:	Conducted Emission Test
Power Line	:	Line 1
Test Mode	:	Mode 3: Transmit (802.11ac-80BW-32.5Mbps) (5775MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	dBµV	dB	dBµV
LINE 1					
Quasi-Peak					
0.162	9.790	47.800	57.590	-8.067	65.657
0.173	9.790	48.320	58.110	-7.233	65.343
0.216	9.790	41.810	51.600	-12.514	64.114
0.275	9.790	32.170	41.960	-20.469	62.429
0.314	9.790	27.740	37.530	-23.784	61.314
0.673	9.790	26.420	36.210	-19.790	56.000
Average					
0.162	9.790	33.130	42.920	-12.737	55.657
0.173	9.790	35.650	45.440	-9.903	55.343
0.216	9.790	28.970	38.760	-15.354	54.114
0.275	9.790	19.890	29.680	-22.749	52.429
0.314	9.790	15.080	24.870	-26.444	51.314
0.673	9.790	15.270	25.060	-20.940	46.000

Note:

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

Product	:	Wireless Storage Drive
Test Item	:	Conducted Emission Test
Power Line	:	Line 2
Test Mode	:	Mode 3: Transmit (802.11ac-80BW-32.5Mbps) (5775MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	dBµV	dB	dBµV
LINE 2					
Quasi-Peak					
0.166	9.770	49.590	59.360	-6.183	65.543
0.205	9.770	42.910	52.680	-11.749	64.429
0.224	9.770	37.840	47.610	-16.276	63.886
0.287	9.770	31.830	41.600	-20.486	62.086
0.330	9.770	26.170	35.940	-24.917	60.857
0.713	9.775	26.100	35.875	-20.125	56.000
Average					
0.166	9.770	37.540	47.310	-8.233	55.543
0.205	9.770	30.120	39.890	-14.539	54.429
0.224	9.770	24.320	34.090	-19.796	53.886
0.287	9.770	19.180	28.950	-23.136	52.086
0.330	9.770	13.600	23.370	-27.487	50.857
0.713	9.775	16.250	26.025	-19.975	46.000

Note:

- 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 Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Х	Power Meter	Anritsu	ML2495A/6K00003357	May, 2015
Х	Power Sensor	Anritsu	MA2411B/0738448	Jun., 2015
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2015
Note	- .			

1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

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

3.2. Test Setup

99& Occupied Bandwidth



Conduction Power Measurement (for 802.11an)



Conduction Power Measurement (for 802.11ac)



3.3. Limits

3.3.1. 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.

- 3.3.2. 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.
- 3.3.3. 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.

3.4. 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)b) Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep).

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 D01 section F) procedure is used for measurements.

3.5. Uncertainty

± 1.27 dB



3.6. Test Result of Maximum conducted output power

Product	:	Wireless Storage Drive
Test Item	:	Maximum conducted output power
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11n-20BW 7.2Mbps)

Cable loss=1dB		Maximum conducted output power							
		Data Rate (Mbps)							
Channel No.	Frequency (MHz)	7.2	14.4	21.7	28.9	43.3	57.8	65	72.2
		Measurement Level (dBm)							
36	5180	14.99							
44	5220	14.85	14.64	14.33	14.09	13.83	13.57	13.31	13.05
48	5240	14.86							
149	5745	14.74							
157	5785	14.70	14.57	14.36	14.20	14.03	13.86	13.69	13.52
165	5825	14.86							

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

Maximum conducted output power Measurement:

Channel No	Frequency Range	99% Bandwidth	Output Power	Output Po	ower Limit
	(MHz)	(MHz)	(dBm)	(dBm)	dBm+10log(BW)
36	5180		14.99	24	
44	5220		14.85	24	
48	5240		14.86	24	
149	5745		14.74	30	
157	5785		14.7	30	
165	5825		14.86	30	

Note: Power Output Value =Reading value on average power meter + cable loss



Product	:	Wireless Storage Drive
Test Item	:	Maximum conducted output power
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11n-40BW 15Mbps)

Cab		Maximum conducted output power								
				Ι	Data Rate	(Mbps)				
Channel No.	Frequency (MHz)	15	30	45	60	90	120	135	150	
		Measurement Level (dBm)								
38	5190	14.62	14.47	14.25	14.08	13.89	13.71	13.52	13.34	
46	5230	14.64								
151	5755	14.92	14.77	14.52	14.34	14.14	13.94	13.74	13.54	
159	5795	14.96								

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

Maximum conducted output power Measurement:

Channel No	Frequency Range	99% Bandwidth	Output Power	Output Pc	ower Limit
	(MHz)	(MHz)	(dBm)	(dBm)	dBm+10log(BW)
38	5190		14.62	24	
46	5230		14.64	24	
151	5755		14.92	30	
159	5795		14.96	30	

Note: Power Output Value =Reading value on average power meter + cable loss



Product	:	Wireless Storage Drive
Test Item	:	Maximum conducted output power
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11ac-80BW-32.5Mbps)

Cable lo	ss=1dB		Maximum conducted output power									
Channel Ma		Data Rate (Mbps)										
Channel No	(MHz)	VTH0	VTH1	VTH2	VTH3	VTH4	VTH5	VTH6	VTH7	VTH8	VTH9	
42	5210	13.36	13.12	12.87	12.63	12.38	12.14	11.89	11.65	11.40	11.16	
155	5775	13.97	13.76	13.35	13.07	12.76	12.45	12.14	11.83	11.52	11.21	

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

Maximum conducted output power Measurement

Channel No	Frequency Range	26dB Bandwidth	Output Power	Output Power Limit		Result	
	(MHz)	(MHz)	(dBm)	(dBm) dBm+10log(BW)			
42	5210		13.36	24		Pass	
155	5775		13.97	30		Pass	

Note: Power Output Value =Reading value on average power meter + cable loss



99% Occupied Bandwidth:

Channel 42

🚺 Keysight S	pectrum Analyzer - Oce	cupied BW								
Center I	RF 50 Ω Freq 5.21000	AC 00000 GH: #IEG	Z ain:Low	SENS Center Free Trig: Free F #Atten: 30	E:INT q: 5.21000 Run dB	0000 GHz Avg Hol	ALIGN AUTO d: 10/10	01:20:46 P Radio Std Radio Dev	M Oct 07, 2015 : None rice: BTS	Frequency
10 dB/div	Ref Offset Ref 20.5	0.5 dB 0 dBm								
10.5 0.500			mann		al-matina	************	1 1			Center Freq 5.210000000 GHz
-19.5 -29.5	Not-some the second of the sold started	www.longland					Latin war	Pro-Markaweldky	And the fact which a	
-39.5 -49.5 -59.5										
-69.5 Center 4 #Res BM	5.21 GHz			#VBV	∾ змн	z		Span Swe	200 MHz	CF Step
Occu	pied Band	width		-	Total P	ower	20.4	dBm		Auto Man
Trans	mit Freq Er	/5./	39.229 kH	Z Iz (OBW P	ower	99	.00 %		Freq Offset 0 Hz
X GR	Bandwidth		97.05 MH		K dB		-26.	00 aB		
MSG							STATUS	•		

Channel 155

🚺 Keysight S	Spectrum Analyzer - Oc	cupied BW							
Center	RF 50 Ω Freq 5.77500	AC 00000 GHz	Cente	SENSE:INT Freq: 5.77500 Free Run	00000 GHz Avg Hold	ALIGN AUTO	Radio Sto	M Oct 07, 2015 I: None	Frequency
	_	#IFGain	Low #Atte	n: 30 dB	10.000		Radio De	vice: BTS	
10 dB/div	Ref Offset Ref 20.5	0.5 dB 0 dBm					· · ·		
10.5									Center Freq
0.500	1		and the same and the same of t	- Alexandre	مىيەلىرىنىرىغوراكىيە.	marth garnes 18			5.775000000 GHz
-19.5	1.4.0							y an sociality	
-29.5	איץ איי							¥3.80 ¥ d i h∾ 140	
-39.5									
-59.5								-	
-69.5		0			2				
Center #Res BV	5.775 GHz V 1 MHz	l	#	VBW 3 MH	z	4	Spar Sw	n 100 MHz eep 1 ms	CF Step
Occu	upied Band	width		Total P	ower	20.0	dBm		<u>Auto</u> Man
		75.613	3 MHz						Freq Offset
Trans	smit Freq Err	ror 85	.848 kHz	OBW P	ower	99	.00 %		0 Hz
x dB	Bandwidth	95	5.05 MHz	x dB		-26.	00 dB		
							1		
MSG						STATUS			



Maximum conducted output power:

Channel 42

🊺 Key	/sight Sp	ectrum Analyzer -	Channel Power								
Cent	ter F	req 5.210	000000 GH	z	Center Fr	NSE:INT req: 5.21000	00000 GHz	ALIGN AUTO	Radio Std:	Nov 13, 2015	Frequency
]	#IFC	Gain:Low	#Atten: 30 dB				Radio Dev	ice: BTS	
10 dE	3/div	Ref Offs Ref 20	set 0.5 dB 1.50 dBm								
Log 10.5									-		Center Freq
0.500				poper annalyse over	*\\$*_*********	Januar-sundersan	workselwite-sety				5.210000000 GHz
-9.50											
-29.5			ي م						7+		
-39.5 -49.5	freedow	have been and	Hand and the factor of the fac					V by by by the	hour free me seen	and the second	
-59.5											
-69.5											
Cent #Res	ter 5 s BW	0.21 GHz 1 MHz			#VE	SW 3 MH	z		Span Swe	200 MHz ep 1 ms	CF Step 20.000000 MHz
С	han	nel Powe	er			Power	Spectr	al Dens	itv		<u>Auto</u> Man
									,		Freq Offset
		13.36 c	IBm / 7	5.76 M⊦	Iz		65.44	dBm	/Hz		0 Hz
MSG									3		

Channel 155

🚺 Keysight Spe	ectrum Analyzer - Ch	annel Power								
Center Fi	req 5.77500	AC 00000 GH	z	Center F	NSE:INT req: 5.77500	00000 GHz	ALIGN AUTO	03:03:09 P Radio Std	MNov 13, 2015 : None	Frequency
		#IFC	Gain:Low	#Atten: 3	e Run 80 dB	Avg Hold	1:>10/10	Radio Dev	rice: BTS	
10 dB/div	Ref Offset Ref 20.5	0.5 dB 0 dBm								
10.5						-				Center Freq
0.500			Jan Martin Martin	k de man de man ar de man	Junior	-				5.775000000 GHz
-9.50										
-29.5							1			
-39.5	and have any and the state of t	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		1		8	Wwww	Mar Arlama &	mo	
-49.5 mm//////									. Alastakin	
-69.5										
Center 5. #Res BW	.775 GHz 1 MHz			#VE	в мзмн	lz		Span 1 Swe	99.6 MHz ep 1 ms	CF Step 19.960401 MHz
Chanı	nel Power				Power	Spect	ral Dens	sity		<u>Auto</u> Man
1	13.97 dE	3m / 7	5.61 MH	Iz	-	64.81	dBm	/Hz		Freq Offset 0 Hz
MSG								S		

4. Peak Power Spectral Density

4.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun., 2015
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun., 2015
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2015

Note:

- 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
- 2. The test instruments marked with "X" are used to measure the final test results.

4.2. Test Setup



4.3. 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.

4.4. 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 $BWCF = 10\log (500 \text{ kHz}/100 \text{ kHz}) = 6.98 \text{ dB}.$

4.5. Uncertainty

± 1.27 dB

4.6. Test Result of Peak Power Spectral Density

Product	:	Wireless Storage Drive
Test Item	:	Peak Power Spectral Density
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11n-20BW 7.2Mbps)

Channel Number	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
36	5180	4.270	11	Pass
44	5220	4.100	11	Pass
48	5240	3.820	11	Pass

Channel Number	Frequency (MHz)	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm)	Required Limit (dBm)	Result
149	5745	-5.62	6.98	1.36	<30	Pass
157	5785	-5.52	6.98	1.46	<30	Pass
165	5825	-5.75	6.98	1.23	<30	Pass

Note: Total PPSD Value = PPSD value + BWCF.



Kevsight	Spectrum Analyzer - Swept SA					
Center	RF 50 Ω AC	00 GHz	SENSE:INT	ALIGN AUTO #Avg Type: RMS	01:27:10 PM Oct 07, 2015 TRACE 1 2 3 4 5 6	Frequency
10 dB/div	Ref Offset 0.5 dB Ref 20.50 dBm	PNO: Fast ⊂ IFGain:Low	#Atten: 30 dB	Mkr1	5.180 975 GHz 4.27 dBm	Auto Tune
10.5			1			Center Freq 5.180000000 GHz
-9.50						Start Freq 5.167500000 GHz
-19.5	l				and the second	Stop Freq 5.192500000 GHz
-39.5						CF Step 2.500000 MHz <u>Auto</u> Man
-59.5						Freq Offset 0 Hz
-69.5 Center :	5.18000 GHz	#\/B14	3.0 MHz	Sween	Span 25.00 MHz	
MSG	99 1.0 PH12	# V D V V	3.0 IVITIZ	STATU	s	

Channel 36:

Channel 44:

🚺 Keysight Sp	ectrum Analyzer - Swept	SA						
Center F	RF 50 Ω req 5.220000	AC 000 GHz	SENSE:INT	#Avg Type	ALIGN AUTO E: RMS	01:30:35 Pf	E 1 2 3 4 5 6	Frequency
10 dB/div	Ref Offset 0.5 dl Ref 20.50 dB	PN0: Fast G	#Atten: 30 dB		Mkr1	5.218 5 4.	75 GHz 10 dBm	Auto Tune
10.5			1					Center Freq 5.220000000 GHz
-9.50								Start Fred 5.207500000 GHz
-19.5							No a state to make a se	Stop Frec 5.232500000 GH;
-39.5								CF Step 2.500000 MH Auto Mar
-59.5								Freq Offse 0 H:
-69.5 Center 5. #Res BW	22000 GHz 1.0 MHz	#VBW	3.0 MHz		Sweep 1	Span 2 .000 ms (5.00 MHz 1001 pts)	
MSG					STATUS	3		L



🗾 Keysight Sp	ectrum Analyzer - Swept SA							
Center F	RF 50 Ω AC req 5.24000000	0 GHz	SENSE:IN	#Avg Typ	ALIGN AUTO e: RMS	01:35:00 PM TRAC TYP	E 1 2 3 4 5 6	Frequency
10 dB/div	Ref Offset 0.5 dB	IFGain:Low	#Atten: 30 dB		Mkr1	5.239 1 3.5	00 GHz 82 dBm	Auto Tune
10.5			● ¹					Center Freq 5.240000000 GHz
-9.50								Start Freq 5.227500000 GHz
-19.5							Ja Maria	Stop Freq 5.252500000 GHz
-39.5								CF Step 2.500000 MHz <u>Auto</u> Man
-59.5								Freq Offset 0 Hz
- ^{69.5} Center 5. #Res BW	24000 GHz 1.0 MHz	#VB1	N 3.0 MHz		Sweep 1	Span 2: .000 ms (5.00 MHz 1001 pts)	
MSG					STATUS	1		

Channel 48:

Channel 149





🚺 Keys	ight Spectrum Analyzer -	Swept SA								
Cent	er Freq 5.785	000000 GH	z	SEI	Run	#Avg Typ	ALIGN AUTO	04:11:04 P TRAC	M Oct 07, 2015 DE 1 2 3 4 5 6 PE A WWWWW	Frequency
10 dB.	Ref Offset div Ref 20.5	0.5 dB 0 dBm	ain:Low	#Atten: 3	0 dB		Mkr	□ 1 5.784 -5.	10 GHz 52 dBm	Auto Tune
10.5 -										Center Freq 5.78500000 GHz
0.500 - -9.50 -			pyman	MMMMMM	MMMMMM	mmummy				Start Freq 5.76000000 GHz
-19.5 - -29.5 -										Stop Freq 5.81000000 GHz
-39.5 - -49.5 -	harphotophyrous	MANNA MAN					when man	montelester	b (lo.	CF Step 5.000000 MHz <u>Auto</u> Man
n -59.5 –	WWWWWW .								north the sal	Freq Offset 0 Hz
-69.5 - Cente	er 5.78500 GHz	2						Span 5	0.00 MHz	
#Res	BW 100 kHz		#VBW	' 300 kHz			Sweep 6	6.200 ms (s	(1001 pts)	

Channel 157

Channel 165

D Keysie	ght Spectrum Analyzer - Sw	ept SA								
Cente	RF 50 S	AC	z	SEI	Run	#Avg Typ	ALIGN AUTO e: RMS	04:13:36 PI TRAC	HOct 07, 2015	Frequency
10 dB/c	Ref Offset 0. div Ref 20.50	5 dB dBm	NO: Fast Gain:Low	#Atten: 3	0 dB		Mkr	1 5.824 -5.	10 GHz 75 dBm	Auto Tune
10.5 -										Center Freq 5.825000000 GHz
0.500 — -9.50 —			10000000	mannand	MMMMM	n Marina Marina				Start Freq 5.80000000 GHz
-19.5 — -29.5 —			-							Stop Freq 5.85000000 GHz
-39.5		ntraturary the part					M. M. Margary	multinon		CF Step 5.000000 MHz <u>Auto</u> Man
-59.5 —	www.							. 40*	Mundhermanner	Freq Offset 0 Hz
-69.5	r 5.82500 GHz							Span 5	0.00 MHz	
#Res	BW 100 kHz		#VBW	300 kHz			Sweep 6	.200 ms (1001 pts)	

Product	:	Wireless Storage Drive
Test Item	:	Peak Power Spectral Density
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11n-40BW 15Mbps)

Channel Number	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
38	5190	5.810	11	Pass
46	5230	2.710	11	Pass

Channel Number	Frequency (MHz)	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm)	Required Limit (dBm)	Result
151	5755	-8.83	6.98	-1.85	<30	Pass
159	5795	-8.67	6.98	-1.69	<30	Pass

Note: Total PPSD Value = PPSD value + BWCF.



			Channel.	50		
💓 Keysight Sp	ectrum Analyzer - Swept SA					
LXI RL	RF 50 Ω AC		SENSE:INT	ALIGN AUTO	01:41:32 PM Oct 07, 2015	Farmers
Center F	reg 5.1900000	00 GHz		#Avg Type: RMS	TRACE 1 2 3 4 5 6	Frequency
		PNO: Fast 😱	Trig: Free Run		DET A N N N N N	
		IFGain:Low	#Atten: 30 dB		BEIJ	Auto Tuno
	Pof Offeret 0.5 dB			Mkr	1 5.186 95 GHz	Auto Tune
10 dB/div	Ref 20.50 dBm	1			5.81 dBm	
Log						
						Center Fred
10.5			- 1			Genterrieq
10.5				- 21-1		5.190000000 GHz
	warman	and see the second second second	management hanness	and a second second second second	- and the second	
0.500			Y			in the second se
						Start Freq
0.50						5.165000000 GHz
-9.50	1				1	
angra	- Andrew Contraction				menter randeren	
-19.5						Stop Fred
						Stopried
						5.215000000 GHz
-29.5			1			
						OF Otom
-39.5						E OOOOO MU
						5.000000 MHZ
10.5						Auto Man
-49.5						
						From Offsot
-59.5						Trequiser
						0 Hz
60 F						
-69.5						
Center 5.	19000 GHz			2 <u>2</u>	Span 50.00 MHz	
#Res BW	1.0 MHz	#VBW	3.0 MHz	Sweep 1	.000 ms (1001 pts)	
MSG				STATU	3	
100						

Channel 38

Channel 46

🚺 Keysight Spe	ectrum Analyzer - Swep	t SA							
Center F	RF 50 Ω req 5.230000	AC 0000 GHz	SEN	SE:INT	#Avg Type	LIGN AUTO RMS	01:44:27 PM TRAC	Oct 07, 2015	Frequency
10 dB/div	Ref Offset 0.5 o Ref 20.50 dB	IFGain:Low	#Atten: 30	dB		Mkr1	5.227 2.7	85 GHz 1 dBm	Auto Tune
10.5			▲ ¹						Center Freq 5.230000000 GHz
-9.50		ing and the second s		Francisco		and a second			Start Freq 5.205000000 GHz
-19.5								hand the for the second	Stop Freq 5.255000000 GHz
-39.5									CF Step 5.000000 MHz Auto Man
-59.5									Freq Offset 0 Hz
-69.5 Center 5.3 #Res BW	23000 GHz 1.0 MHz	#VE	BW 3.0 MHz		S	weep 1.0	Span 5(000 ms ()	0.00 MHz 1001 pts)	
MSG						STATUS			



					U	nanne	el 151				
🚺 Keysi	ght Spect	rum Analyzer - Sw	vept SA								
KI RL		RF 50 Ω	AC	-	SEI	NSE:INT	#Ava Tvp	ALIGN AUTO	04:22:08 F	PM Oct 07, 2015	Frequency
Cente		eq 5.7550	PI IFC	IZ NO: Fast G Gain:Low	Trig: Fre #Atten: 3	e Run 0 dB	191 B 191	e. King	T	PE A WWWW DET A NNNNN	
10 dB/	Ref Offset 0.5 dB 10 dB/div Ref 20.50 dBm					Mkr1 5				6 6 GHz .83 dBm	Auto Tune
											Center Fred
10.5			5							2	5 75500000 GHz
0.000											0.70000000 0112
0.500 —			87	· · · · ·			1	· · · · ·			01- 1 F
					. ▲1						StartFreq
-9.50 —				New York Contraction	of the second second second		Universition of the second second				5.705000000 GHz
10.5											
-19.5 —						Į.	1				Stop Freq
-29.5				1			1				5.805000000 GHz
				1			1				
-39.5 —		_	11	<u>.</u>					-		CF Step
		1 da	and and a special state of the					" Phankyphoton	Man.		Auto Man
-49.5 —		-under the start and							and the state of the second seco	Million	
1.5	THE MAN AND	14								a manager and the second	Freg Offset
-59.5											0 Hz
2010											
-69.5 —											
Cente #Res	er 5.7: BW 1	5500 GHz		#VBW	300 kHz			Sween 1	Span ' 2 40 ms	100.0 MHz (1001 nts)	
MSG	5.4 1	VV N12		<i>"</i> v D v v	000 KHZ	i.	2	STATUS	2.77 113	(1001 pts)	

Ch 1 1 5 1

Channel 159

🊺 Key	sight Spec	trum Analyzer - Sw	ept SA								
Cen	ter Fr	RF 50 Ω eq 5.79500	AC	z	SEI	NSE:INT	#Avg Typ	ALIGN AUTO	04:33:31 TRA	PM Oct 07, 2015	Frequency
10 dE	3/div	Ref Offset 0.5 Ref 20.50 (dB dBm	Gain:Low	#Atten: 3	0 dB		Mk	r1 5.79 -8	9 4 GHz .67 dBm	Auto Tune
10.5											Center Freq 5.795000000 GHz
0.500 -9.50				P aranthu graduatio	ulation and a strength of the st	1 1	koninalina ita				Start Freq 5.745000000 GHz
-19.5 -29.5											Stop Freq 5.845000000 GHz
-39.5			unnerstratingfor					W. Marchallower	Way was		CF Step 10.000000 MHz <u>Auto</u> Man
-59.5	a the second									nillentet-serverierien	Freq Offset 0 Hz
-69.5 Cent	ter 5.7	9500 GHz							Span	100.0 MHz	
#Res ^{MSG}	s BW 1	00 kHz		#VBW	300 kHz			Sweep 1	2.40 ms	(1001 pts)	

•

Product	:	Wireless Storage Drive
Test Item	:	Peak Power Spectral Density

Test Site : No.3 OATS

Test Mode : Mode 3: Transmit (802.11ac-80BW-32.5Mbps)

Channel Number	Frequency (MHz)	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm)1	Result
42	5210	-2.360		-2.360	<11
155	5775	-11.730	6.98	-4.750	<30

Note: Total PPSD Value = PPSD value + BWCF



				Cn	annei	42				
🊺 Ke	ysight Spectrum An	alyzer - Swept SA	(
Cen	L RF Iter Freq 5.	50 Ω AC	00 GHz	SENS	E:INT	#Avg Type:	IGN AUTO	01:22:17 PM TRAC	E 1 2 3 4 5 6	Frequency
			PNO: Fast G IFGain:Low	#Atten: 30	dB			DE	ANNNNN	
10 di	Ref C B/div Ref 3	offset 0.5 dB 20.50 dBn	n				M	(r1 5.174 -2.3	18 GHz 36 dBm	
LUg									6	Center Fred
10.5										5.210000000 GHz
		1								
0.500		Junior	and the second second		-			and the second s		Start Freq
-9.50	/			V						5.16000000 GHz
	E E									
-19.5										Stop Freq
20.7								1	-	5.260000000 GHz
-29.5	~~~								hun	
-39.5										CF Step
										Auto Man
-49.5										
-59.5										Freq Offset
00.0										0 Hz
-69.5										
Cen	ter 5.21000	GHz	1077274 20174			-	63	Span 1	00.0 MHz	
#Re	s BW 1.0 M	Hz	#VBN	3.0 MHz		SI	veep 1	.000 ms (1001 pts)	
MSG							STATUS	5		

Channel 42

Channel 155

Di Key	/sight Spectrum	Analyzer - Sw	ept SA								
Cen	ter Freq	5.7750C	AC	lz	SEN	NSE:INT	#Avg Type	ALIGN AUTO e: RMS	04:01:34 PI TRAC	4 Oct 07, 2015 E 1 2 3 4 5 6	Frequency
10 dE	Re 3/div R €	f Offset 0.5	dB dBm	NO: Fast Gain:Low	#Atten: 3	0 dB		Mk	r1 5.810 -11.	0 3 GHz 73 dBm	Auto Tune
Log 10.5											Center Freq 5.775000000 GHz
0.500 -9.50			Mundauntation plant	กุปนกุรสมุญญาติมาก	un an	Jaman Jam		Autorian Manageria	1		Start Freq 5.725000000 GHz
-19.5 -29.5											Stop Freq 5.825000000 GHz
-39.5	angellinuthing	/							ł	My My winner	CF Step 10.000000 MHz <u>Auto</u> Man
-49.5											Freq Offset 0 Hz
-69.5											
Cent #Res	ter 5.7750 3 BW 100)0 GHZ KHZ		#VBW	300 kHz			Sweep 1	Span 1 2.40 ms (00.0 IVIHZ 1001 pts)	
MSG								STATUS			



5. Radiated Emission

5.1. Test Equipment

The following test equipments are used during the radiated emission test:

Test Site	Equipment		Manufacturer	Model No./Serial No.	Last Cal.
Site # 3	X Magnetic Loop Antenna		Teseq	HLA6121/ 37133	Sep., 2015
	Х	Bilog Antenna	Schaffner Chase	CBL6112B/ 2707	Jun., 2015
	Х	EMI Test Receiver	R&S	ESCS 30/838251/ 001	Jun., 2015
	Х	Coaxial Cable	QTK(Arnist)	RG 214/ LC003-RG	Jun., 2015
	Χ	Coaxial signal switch	Arnist	MP59B/ 6200798682	Jun., 2015

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
CB # 8	Х	Spectrum Analyzer	R&S	FSP40/ 100339	Oct., 2015
	Х	Horn Antenna	ETS-Lindgren	3117/ 35205	Mar., 2015
	X Horn Antenna		Schwarzbeck	BBHA9170/209	Jan., 2015
	Х	Horn Antenna	TRC	AH-0801/95051	Aug., 2015
	X Pre-Amplifier		EMCI	EMC012630SE/980210	Jan., 2015
	Х	Pre-Amplifier	MITEQ	JS41-001040000-58-5P/153945	Jul., 2015
	Х	Pre-Amplifier	NARDA	DBL-1840N506/013	Jul., 2015

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

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

5.2. Test Setup

Radiated Emission Below 1GHz





Radiated Emission Above 1GHz



5.3. 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 Subpart C Paragraph 15.209(a) Limits									
Frequency MHz	Field strength	Measurement distance							
	(microvolts/meter)	(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)

5.4. 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.

5.5. Uncertainty

- ± 3.8 dB below 1GHz
- ± 3.9 dB above 1GHz

5.6. **Test Result of Radiated Emission**

Product	:	Wireless Storage Drive
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11n-20BW 7.2Mbps) (5180MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	$dB\mu V/m$	dB	dBµV/m
Horizontal					
Peak Detector:					
10360.000	13.054	52.270	65.324	-8.676	74.000
15540.000	*	*	*	*	74.000
20720.000	*	*	*	*	74.000
25900.000	*	*	*	*	74.000
Average					
Detector:					
10360.000	13.054	29.230	42.284	-11.716	54.000
Vertical					
Peak Detector:					
10360.000	13.848	48.170	62.018	-11.982	74.000
15540.000	*	*	*	*	74.000
20720.000	*	*	*	*	74.000
25900.000	*	*	*	*	74.000
Average					
Detector:					
10360.000	13.848	25.090	38.938	-15.062	54.000

Note:

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

Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.

4. Measurement Level = Reading Level + Correct Factor.

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

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

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

Product	:	Wireless Storage Drive
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11n-20BW 7.2Mbps) (5220MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	dBµV/m	dB	$dB\mu V/m$
Horizontal					
Peak Detector:					
10440.000	13.462	48.120	61.581	-12.419	74.000
15660.000	*	*	*	*	74.000
20880.000	*	*	*	*	74.000
26100.000	*	*	*	*	74.000
Average					
Detector:					
10440.000	13.462	27.030	40.491	-13.509	54.000
Vertical					
Peak Detector:					
10440.000	14.385	46.970	61.355	-12.645	74.000
15660.000	*	*	*	*	74.000
20880.000	*	*	*	*	74.000
26100.000	*	*	*	*	74.000
Average					
Detector:					
10440.000	14.385	26.020	40.405	-13.595	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 = 10 Hz, 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 | : | Wireless Storage Drive |
|-----------|---|---|
| Test Item | : | Harmonic Radiated Emission Data |
| Test Site | : | No.3 OATS |
| Test Mode | : | Mode 1: Transmit (802.11n-20BW 7.2Mbps) (5240MHz) |

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	$dB\mu V/m$	dB	$dB\mu V/m$
Horizontal					
Peak Detector:					
10480.000	13.813	45.950	59.764	-14.236	74.000
15720.000	*	*	*	*	74.000
20960.000	*	*	*	*	74.000
26200.000	*	*	*	*	74.000
Average					
Detector:					
10480.000	42.641	26.700	40.514	-13.486	54.000
Vertical					
Peak Detector:					
10480.000	14.740	45.570	60.310	-13.690	74.000
15720.000	*	*	*	*	74.000
20960.000	*	*	*	*	74.000
26200.000	*	*	*	*	74.000
Average					
Detector:					
10480.000	14.740	25.860	40.600	-13.400	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 = 10 Hz, 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	:	Wireless Storage Drive
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11n-20BW 7.2Mbps) (5745MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	$dB\mu V/m$	dB	dBµV/m
Horizontal					
Peak Detector:					
11490.000	17.106	35.520	52.627	-21.373	74.000
17235.000	*	*	*	*	74.000
20720.000	*	*	*	*	74.000
25900.000	*	*	*	*	74.000
31080.000	*	*	*	*	74.000
36260.000	*	*	*	*	74.000
Average					
Detector:					
*	*	*	*	*	*
Vertical					
Peak Detector:					
11490.000	18.034	36.490	54.525	-19.475	74.000
17235.000	*	*	*	*	74.000
20720.000	*	*	*	*	74.000
25900.000	*	*	*	*	74.000
31080.000	*	*	*	*	74.000
36260.000	*	*	*	*	74.000
Average					
Detector:					
11490.000	18.034	16.570	34.605	-19.395	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 = 10 Hz, 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	: Wireles	s Storage Drive					
Test Item	: Harmonic Radiated Emission Data						
Test Site	: No.3 OATS						
Test Mode	: Mode 1	: Transmit (802.11	In-20BW 7.2Mbps) (3	5785MHz)			
Frequency	Correct	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
MHz	dB	dBµV	$dB\mu V/m$	dB	dBµV/m		
Horizontal							
Peak Detector:							
11570.000	16.809	36.510	53.319	-20.681	74.000		
17355.000	*	*	*	*	74.000		
20880.000	*	*	*	*	74.000		
26100.000	*	*	*	*	74.000		
31320.000	*	*	*	*	74.000		
36540.000	*	*	*	*	74.000		
Average							
Detector:							
*	*	*	*	*	*		
Vertical							
Peak Detector:							
11570.000	17.698	36.530	54.228	-19.772	74.000		
17355.000	*	*	*	*	74.000		
20880.000	*	*	*	*	74.000		
26100.000	*	*	*	*	74.000		
31320.000	*	*	*	*	74.000		
36540.000	*	*	*	*	74.000		
Average							
Detector:							
11570.000	17.698	17.680	35.378	-18.622	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 = 10 Hz, 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	: Wireless Storage Drive							
Test Item	: Harmonic Radiated Emission Data							
Test Site	: No.3 OATS							
Test Mode : Mode 1: Transmit (802.11n-20BW 7.2Mbps) (5825MHz)								
Fraguanay	Corrot	Dooding	Maguramont	Morgin	Limit			
Frequency	Contect	Reading	Measurement	Margin	LIIIIIt			
	Factor	Level	Level					
MHz	dB	dBµV	dBµV/m	dB	dBµV/m			
Horizontal								
Peak Detector:								
11650.000	16.158	34.760	50.918	-23.082	74.000			
17475.000	*	*	*	*	74.000			
20960.000	*	*	*	*	74.000			
26200.000	*	*	*	*	74.000			
31440.000	*	*	*	*	74.000			
36680.000	*	*	*	*	74.000			
Average								
Detector:								
11650.000	*	*	*	*	54.000			
Vertical								
Peak Detector:								
11650.000	17.274	35.720	52.995	-21.005	74.000			
17475.000	*	*	*	*	74.000			
20960.000	*	*	*	*	74.000			
26200.000	*	*	*	*	74.000			
31440.000	*	*	*	*	74.000			
36680.000	*	*	*	*	74.000			
Average								
Detector:								
*	*	*	*	*	*			

- 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 = 10 Hz, 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	:	Wireless Storage Drive
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11n-40BW 15Mbps) (5190MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	$dB\mu V/m$	dB	$dB\mu V/m$
Horizontal					
Peak Detector:					
10380.000	13.081	46.180	59.261	-14.739	74.000
15570.000	*	*	*	*	74.000
20760.000	*	*	*	*	74.000
25950.000	*	*	*	*	74.000
Average					
Detector:					
10380.000	13.081	28.530	41.611	-12.389	54.000
Vertical					
Peak Detector:					
10380.000	13.938	43.650	57.588	-16.412	74.000
15570.000	*	*	*	*	74.000
20760.000	*	*	*	*	74.000
25950.000	*	*	*	*	74.000
Average					
Detector:					
10380.000	13.938	25.720	39.658	-14.342	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 = 10 Hz, 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	:	Wireless Storage Drive
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11n-40BW 15Mbps) (5230MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	$dB\mu V/m$	dB	$dB\mu V/m$
Horizontal					
Peak Detector:					
10460.000	13.638	45.330	58.968	-15.032	74.000
15690.000	*	*	*	*	74.000
20920.000	*	*	*	*	74.000
26150.000	*	*	*	*	74.000
Average					
Detector:					
10460.000	13.638	25.980	39.618	-14.382	54.000
Vertical					
Peak Detector:					
10460.000	43.294	43.910	58.473	-15.527	74.000
15690.000	*	*	*	*	74.000
20920.000	*	*	*	*	74.000
26150.000	*	*	*	*	74.000
Average					
Detector:					
10460.000	14.563	23.850	38.413	-15.587	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 = 10 Hz, 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	:	Wireless Storage Drive
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11n-40BW 15Mbps) (5755MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	$dB\mu V/m$	dB	dBµV/m
Horizontal					
Peak Detector:					
11510.000	17.124	32.760	49.884	-24.116	74.000
17265.000	*	*	*	*	74.000
20760.000	*	*	*	*	74.000
25950.000	*	*	*	*	74.000
31140.000	*	*	*	*	74.000
36330.000	*	*	*	*	74.000
Average					
Detector:					
*	*	*	*	*	*
Vertical					
Peak Detector:					
11510.000	18.081	34.120	52.201	-21.799	74.000
17265.000	*	*	*	*	74.000
20760.000	*	*	*	*	74.000
25950.000	*	*	*	*	74.000
31140.000	*	*	*	*	74.000
36330.000	*	*	*	*	74.000
Average					
Detector:					
*	*	*	*	*	*

- 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 = 10 Hz, 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	: Wireles	s Storage Drive				
Test Item	: Harmonic Radiated Emission Data					
Test Site	: No.3 OATS					
Test Mode	: Mode 2: Transmit (802.11n-40BW 15Mbps) (5795MHz)					
Frequency	Correct	Reading	Measurement	Margin	Limit	
	Factor	Level	Level			
MHz	dB	dBµV	$dB\mu V/m$	dB	dBµV/m	
Horizontal						
Peak Detector:						
11590.000	16.701	32.730	49.430	-24.570	74.000	
17385.000	*	*	*	*	74.000	
20920.000	*	*	*	*	74.000	
26150.000	*	*	*	*	74.000	
31380.000	*	*	*	*	74.000	
36610.000	*	*	*	*	74.000	
Average						
Detector:						
*	*	*	*	*	*	
Vertical						
Peak Detector:						
11590.000	17.567	33.270	50.836	-23.164	74.000	
17385.000	*	*	*	*	74.000	
20920.000	*	*	*	*	74.000	
26150.000	*	*	*	*	74.000	
31380.000	*	*	*	*	74.000	
36610.000	*	*	*	*	74.000	
Average						
Detector:						
*	*	*	*	*	*	

- 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 = 10 Hz, 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	: Wireless Storage Drive					
Test Item	: Harmonic Radiated Emission Data					
Test Site	: No.3 OATS					
Test Mode	: Mode 3	: Transmit (802.11	ac-80BW-32.5Mbps)	(5210MHz)		
Frequency	Correct	Reading	Measurement	Margin	Limit	
	Factor	Level	Level			
MHz	dB	dBµV	$dB\mu V/m$	dB	dBµV/m	
Horizontal						
Peak Detector:						
10420.000	13.135	37.930	51.065	-22.935	74.000	
11550.000	*	*	*	*	74.000	
17325.000	*	*	*	*	74.000	
20720.000	*	*	*	*	74.000	
25900.000	*	*	*	*	74.000	
31080.000	*	*	*	*	74.000	
36260.000	*	*	*	*	74.000	
Average						
Detector:						
*	*	*	*	*	*	
Vertical						
Peak Detector:						
10420.000	14.057	38.120	52.177	-21.823	74.000	
11550.000	*	*	*	*	74.000	
17325.000	*	*	*	*	74.000	
20720.000	*	*	*	*	74.000	
25900.000	*	*	*	*	74.000	
31080.000	*	*	*	*	74.000	
36260.000	*	*	*	*	74.000	
Average						
Detector:						
*	*	*	*	*	*	

- 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 = 10 Hz, 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	: Wireless Storage Drive						
Test Item	: Harmon	ic Radiated Emiss	sion Data				
Test Site	: No.3 OA	: No.3 OATS					
Test Mode	: Mode 3	Transmit (802.11	ac-80BW-32.5Mbps)) (5775MHz)			
Frequency	Correct	Reading	Measurement	Margin	Limit		
	Factor	Level	Level				
MHz	dB	dBµV	$dB\mu V/m$	dB	$dB\mu V/m$		
Horizontal							
Peak Detector:							
11550.000	16.914	32.270	49.184	-24.816	74.000		
17325.000	*	*	*	*	74.000		
20720.000	*	*	*	*	74.000		
25900.000	*	*	*	*	74.000		
31080.000	*	*	*	*	74.000		
36260.000	*	*	*	*	74.000		
Average							
Detector:							
Vertical							
Peak Detector:							
11550.000	17.826	33.250	51.075	-22.925	74.000		
17325.000	*	*	*	*	74.000		
20720.000	*	*	*	*	74.000		
25900.000	*	*	*	*	74.000		
31080.000	*	*	*	*	74.000		
36260.000	*	*	*	*	74.000		
Average							
Detector							

Detector:

- 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 = 10 Hz, 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	: Wireless Storage Drive				
Test Item	: General Radiated Emission				
Test Site	: No.3 OA	ATS			
Test Mode	: Mode 1:	Transmit (802.11	n-20BW 7.2Mbps) (5	5220MHz)	
Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	$dB\mu V/m$	dB	$dB\mu V/m$
Horizontal					
Peak Detector					
98.884	-7.565	47.134	39.570	-3.930	43.500
249.304	-6.004	48.879	42.875	-3.125	46.000
387.072	-1.533	38.757	37.224	-8.776	46.000
499.536	0.051	33.296	33.347	-12.653	46.000
600.754	4.009	26.882	30.891	-15.109	46.000
831.304	6.099	25.387	31.487	-14.513	46.000
Vertical					
Peak Detector					
77.797	-5.574	41.486	35.912	-4.088	40.000
249.304	-7.622	46.716	39.095	-6.905	46.000
374.420	-2.179	40.499	38.320	-7.680	46.000
499.536	-0.848	31.427	30.579	-15.421	46.000
676.667	0.195	34.424	34.620	-11.380	46.000
943.768	6.593	28.150	34.743	-11.257	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 = 10 Hz, 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	: Wireless Storage Drive				
Test Item	: General	Radiated Emissic	on		
Test Site	: No.3 OA	ATS			
Test Mode	: Mode 1:	Transmit (802.11	n-20BW 7.2Mbps) (5	5785MHz)	
Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	$dB\mu V/m$	dB	dBµV/m
Horizontal					
Peak Detector					
98.884	-7.565	45.037	37.473	-6.027	43.500
249.304	-6.004	48.882	42.878	-3.122	46.000
374.420	-1.202	44.167	42.965	-3.035	46.000
499.536	0.051	36.691	36.742	-9.258	46.000
600.754	4.009	29.104	33.113	-12.887	46.000
829.899	6.321	25.013	31.334	-14.666	46.000
Vertical					
Peak Detector					
77.797	-5.574	42.123	36.549	-3.451	40.000
249.304	-7.622	47.169	39.548	-6.452	46.000
374.420	-2.179	40.532	38.353	-7.647	46.000
499.536	-0.848	32.289	31.441	-14.559	46.000
806.000	3.908	24.088	27.996	-18.004	46.000
960.638	7.166	24.443	31.609	-22.391	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 = 10 Hz, 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	: Wireless Storage Drive					
Test Item	: General	: General Radiated Emission				
Test Site	: No.3 OA	ATS				
Test Mode	: Mode 2:	Transmit (802.11	n-40BW 15Mbps) (5	190MHz)		
Frequency	Correct	Reading	Measurement	Margin	Limit	
	Factor	Level	Level			
MHz	dB	dBµV	$dB\mu V/m$	dB	$dB\mu V/m$	
Horizontal						
Peak Detector						
98.884	-7.565	46.794	39.230	-4.270	43.500	
305.536	-2.939	42.067	39.129	-6.871	46.000	
374.420	-1.202	44.079	42.877	-3.123	46.000	
499.536	0.051	38.046	38.097	-7.903	46.000	
745.551	3.310	26.636	29.947	-16.053	46.000	
917.058	6.204	24.416	30.620	-15.380	46.000	
Vertical						
Peak Detector						
98.884	-0.706	41.013	40.307	-3.193	43.500	
211.348	-7.924	44.097	36.173	-7.327	43.500	
374.420	-2.179	40.353	38.174	-7.826	46.000	
499.536	-0.848	32.158	31.310	-14.690	46.000	
690.725	2.504	23.644	26.148	-19.852	46.000	
940.957	6.566	23.989	30.554	-15.446	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 = 10 Hz, 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	: Wireless Storage Drive					
Test Item	: General	: General Radiated Emission				
Test Site	: No.3 O	ATS				
Test Mode	: Mode 2	: Transmit (802.11	n-40BW 15Mbps) (5	755MHz)		
Frequency	Correct	Reading	Measurement	Margin	Limit	
	Factor	Level	Level			
MHz	dB	dBµV	$dB\mu V/m$	dB	dBµV/m	
Horizontal						
Peak Detector						
98.884	-7.565	45.850	38.286	-5.214	43.500	
231.029	-8.242	46.634	38.392	-7.608	46.000	
374.420	-1.202	44.068	42.866	-3.134	46.000	
602.159	4.254	33.503	37.757	-8.243	46.000	
813.029	5.088	25.597	30.684	-15.316	46.000	
928.304	6.909	23.763	30.671	-15.329	46.000	
Vertical						
Peak Detector						
105.913	-0.261	37.802	37.541	-5.959	43.500	
215.565	-8.235	45.378	37.143	-6.357	43.500	
374.420	-2.179	40.304	38.125	-7.875	46.000	
499.536	-0.848	31.924	31.076	-14.924	46.000	
680.884	1.245	25.059	26.305	-19.695	46.000	
945.174	6.593	23.664	30.257	-15.743	46.000	

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- 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 = 10 Hz, 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	: Wireless Storage Drive				
Test Item	: General Radiated Emission				
Test Site	: No.3 OA	ATS			
Test Mode	: Mode 3:	Transmit (802.11	ac-80BW-32.5Mbps)	(5210MHz)	
Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	$dB\mu V/m$	dB	dBµV/m
Horizontal					
Peak Detector					
263.362	-5.004	31.550	26.545	-19.455	46.000
360.362	-1.631	35.475	33.845	-12.155	46.000
503.754	0.154	34.262	34.416	-11.584	46.000
575.449	2.962	37.551	40.513	-5.487	46.000
791.942	5.212	28.488	33.700	-12.300	46.000
933.928	6.630	26.753	33.384	-12.616	46.000
Vertical					
Peak Detector					
263.362	-7.569	28.540	20.970	-25.030	46.000
378.638	-1.584	28.341	26.757	-19.243	46.000
503.754	-0.852	34.758	33.906	-12.094	46.000
575.449	-5.622	39.260	33.638	-12.362	46.000
753.986	3.234	26.701	29.935	-16.065	46.000
933.928	5.813	27.821	33.634	-12.366	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 = 10 Hz, 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	: Wireless Storage Drive				
Test Item	: General Radiated Emission				
Test Site	: No.3 OATS				
Test Mode	: Mode 3:	Transmit (802.11	ac-80BW-32.5Mbps)	(5775MHz)	
Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	$dB\mu V/m$	dB	$dB\mu V/m$
Horizontal					
Peak Detector					
263.362	-5.004	30.426	25.421	-20.579	46.000
360.362	-1.631	37.538	35.908	-10.092	46.000
455.957	-0.437	35.735	35.298	-10.702	46.000
575.449	2.962	38.165	41.127	-4.873	46.000
791.942	5.212	28.958	34.170	-11.830	46.000
960.638	6.391	26.482	32.873	-21.127	54.000
Vertical					
Peak Detector					
263.362	-7.569	29.389	21.819	-24.181	46.000
360.362	-3.627	34.839	31.212	-14.788	46.000
503.754	-0.852	34.654	33.802	-12.198	46.000
575.449	-5.622	38.938	33.316	-12.684	46.000
755.391	3.286	27.201	30.487	-15.513	46.000
933.928	5.813	28.694	34.507	-11.493	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 = 10 Hz, 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 Equipment

RF Conducted Measurement

The following test equipments are used during the band edge tests:

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun., 2015
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun., 2015
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2015

Note:

- 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
- 2. The test instruments marked with "X" are used to measure the final test results.

RF Radiated Measurement:

The following test equipments are used during the band edge tests:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
CB # 8	X Spectrum Analyzer		R&S	FSP40/ 100339	Oct., 2015
	Х	Horn Antenna	ETS-Lindgren	3117/ 35205	Mar., 2015
	Х	Horn Antenna	Schwarzbeck	BBHA9170/209	Jan., 2015
	Х	Horn Antenna	TRC	AH-0801/95051	Aug., 2015
	Х	Pre-Amplifier	EMCI	EMC012630SE/980210	Jan., 2015
	Х	Pre-Amplifier	MITEQ	JS41-001040000-58-5P/153945	Jul., 2015
	Х	Pre-Amplifier	NARDA	DBL-1840N506/013	Jul., 2015

Note:

: 1. All instruments are calibrated every one year.

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



6.2. Test Setup

RF Conducted Measurement:



RF Radiated Measurement:





6.3. 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 MHz	uV/m @3m	dBµV/m@3m				
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.

6.4. 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.

6.5. Uncertainty

- ± 3.8 dB below 1GHz
- ± 3.9 dB above 1GHz



6.6. Test Result of Band Edge

Product	:	Wireless Storage Drive
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11n-20BW 7.2Mbps) (5180MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Dogult
	(MHz)	(dB)	(dBµV)	(dBµV/m)	$(dB\mu V/m)$	(dBµV/m)	Result
36 (Peak)	5150.000	3.340	51.347	54.687	74.00	54.00	Pass
36 (Peak)	5178.551	3.239	93.484	96.723			
36 (Average)	5150.000	3.340	36.119	39.459	74.00	54.00	Pass
36 (Average)	5178.551	3.239	83.845	87.084			



Figure Channel 36:

Horizontal (Average)



Note: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 = 10 Hz, 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	:	Wireless Storage Drive
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11n-20BW 7.2Mbps) (5180MHz)

RF Radiated Measurement (Vertical):

Channel No.	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Dogult
	(MHz)	(dB)	(dBµV)	(dBµV/m)	$(dB\mu V/m)$	(dBµV/m)	Result
36 (Peak)	5149.855	5.259	57.691	62.951	74.00	54.00	Pass
36 (Peak)	5150.000	5.260	57.351	62.611	74.00	54.00	Pass
36 (Peak)	5177.681	5.336	101.428	106.763			
36 (Average)	5150.000	5.260	41.689	46.949	74.00	54.00	Pass
36 (Average)	5178.551	5.337	91.735	97.073			

Figure Channel 36:

Vertical (Peak)





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 = 10 Hz, 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	:	Wireless Storage Drive
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11n-20BW 7.2Mbps) (5240MHz)

Test Frequency	Measurement Level (20dB BW)	Limit	Result
(MHz)	(MHz)	(MHz)	
5240	5244.80	<5250	PASS

NOTE: Accordance with 15.215 requirement.

Agilent Spe	ectrum Analyzer - Occupied	BW					
Center	RF 50 Ω AC Freq 5.240000000	D GHz C #IFGain:Low #4	SENSE:INT enter Freq: 5.240000000 rig: Free Run Av atten: 30 dB	ALIGNAUTO GHz yg Hold: 10/10	10:47:30 A Radio Std: Radio Dev	MJan 12, 2016 : None rice: BTS	Frequency
10 dB/di	v Ref 30.00 dBi	m		MI	kr1 5.24 -3.77	88 GHz 77 dBm	
20.0				1			Center Freq 5.240000000 GHz
-10.0 -20.0		promotion	and the second				
-30.0 -40.0 -50.0	water and and a second				un www.ang	har have	
-60.0 Center #Res B	5.24 GHz W 300 kHz		#VBW 1 MHz		Spa Swe	n 50 MHz ep 1 ms	CF Step
Occ	upied Bandwid 1	th 7 600 MHz	Total Powe	er 15.	9 dBm		<u>Auto</u> Man
Tran x dB	smit Freq Error Bandwidth	20.806 kHz	OBW Pow	er 9: -26	9.00 % 00 dB		Freq Offset 0 Hz
	Dunumuti			20			
MSG				STATU	IS		



Product	:	Wireless Storage Drive
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11n-20BW 7.2Mbps) (5745MHz)

RF Radiated Measurement:

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Measure Level (dBµV /m)	Margin (dB)	Limit (dBµV /m)	Result
Horizontal	5713.406	4.651	47.182	51.834	-16.386	68.220	Pass
Horizontal	5715.000	4.652	46.780	51.432	-16.788	68.220	Pass
Horizontal	5724.855	4.655	56.904	61.558	-16.662	78.220	Pass
Horizontal	5725.000	4.654	56.858	61.512	-16.708	78.220	Pass
Horizontal	5746.014	4.657	89.214	93.871			



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Measure Level (dBµV /m)	Margin (dB)	Limit (dBµV/m)	Result
Vertical	5713.986	5.994	54.284	60.278	-12.790	68.220	Pass
Vertical	5715.000	5.994	52.912	58.906	-14.247	68.220	Pass
Vertical	5725.000	5.992	66.877	72.870	-10.735	78.220	Pass
Vertical	5743.696	5.990	99.119	105.108			





Product	:	Wireless Storage Drive
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11n-20BW 7.2Mbps) (5825MHz)

RF Radiated Measurement:

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Measure Level (dBµV /m)	Margin (dB)	Limit (dBµV/m)	Result
Horizontal	5823.623	4.806	89.635	94.441			
Horizontal	5850.000	4.964	49.015	53.979	-24.241	78.220	Pass
Horizontal	5860.000	5.023	45.129	50.152	-18.068	68.220	Pass
Horizontal	5866.667	5.062	46.139	51.201	-17.019	68.220	Pass



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Measure Level (dBµV/m)	Margin (dB)	Limit (dBµV/m)	Result
Vertical	5823.623	6.006	97.837	103.843			
Vertical	5850.000	6.037	55.164	61.201	-17.019	78.220	Pass
Vertical	5860.000	6.047	48.007	54.054	-14.166	68.220	Pass
Vertical	5861.884	6.049	48.206	54.255	-13.965	68.220	Pass





Product	:	Wireless Storage Drive
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11n-40BW 15Mbps) (5190MHz)

RF Radiated Measurement (Horizontal):

Channal Na	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Dogult
Channel No.	(MHz)	(dB)	(dBµV)	(dBµV/m)	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
38 (Peak)	5150.000	3.340	56.876	60.216	74.00	54.00	Pass
38 (Peak)	5200.000	3.165	89.442	92.607			
38 (Average)	5150.000	3.340	41.097	44.437	74.00	54.00	Pass
38 (Average)	5199.420	3.160	79,588	82,748			

Figure Channel 38:

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 = 10 Hz, 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	:	Wireless Storage Drive
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11n-40BW 15Mbps) (5190MHz)

RF Radiated Measurement (Vertical):

Channal Na	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Dogult
Channel No.	(MHz)	(dB)	(dBµV)	$(dB\mu V/m)$	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
38 (Peak)	5149.855	5.259	63.689	68.949	74.00	54.00	Pass
38 (Peak)	5150.000	5.260	63.688	68.948	74.00	54.00	Pass
38 (Peak)	5187.826	5.363	98.146	103.509			
38 (Average)	5150.000	5.260	48.347	53.607	74.00	54.00	Pass
38 (Average)	5195.217	5.375	87.953	93.329			

Figure Channel 38:

Vertical (Peak)





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 = 10 Hz, 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	:	Wireless Storage Drive
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11n-40BW 15Mbps) (5230MHz)

Test Frequency	Measurement Level (20dB BW)	Limit	Result
(MHz)	(MHz)	(MHz)	
5230	5248.10	<5250	PASS

NOTE: Accordance with 15.215 requirement.

Agilent Spe	ectrum Analy	zer - Oc	cupied BW						-90				
w Center	Freq 5.	50 Ω 23000	AC 00000 G #I	Hz FGain:Lov	Cento →→→ Trig: v #Atte	SENSE:INT er Freq: 5.2300 Free Run n: 30 dB	00000 GHz Avg Hold	ALIGN AUTO	10:49:4 Radio S Radio E	13 AM Std: Devi	4 Jan 12, 2016 None ice: BTS	F	requency
10 dB/div	v Re	f <u>30.0</u>	0 dBm					Mk	(r1 5.) -6.3	24 323	81 GHz 32 dBm		
20.0										1_		5.23	Center Freq 30000000 GHz
-10.0 -20.0 -30.0	- more al	puer-yan	Jane Stranger Str	nerdenis	Market Market		Jermine Calenary	anter Jackstone Marca	man		Mmn		
-40.0											••••••••••••••••••••••••••••••••••••••		
Center #Res B	5.23 GH W 300 k	z Hz			#	¢VBW 1 MI	łz		S S	par we	n 50 MHz ep 1 ms	(CF Step 5.000000 MHz
Occ	upied I	Band	lwidth	404		Total F	ower	15.9) dBm			<u>Auto</u>	Man
Tran x dB	36.131 IVII Transmit Freq Error 30.249 I x dB Bandwidth 39.09 M		VIHZ 19 kHz 9 MHz	OBW F x dB	Power	99 -26.	9.00 % 00 dB				Freq Offset 0 Hz		
MSG								STATUS	5				



Product	:	Wireless Storage Drive
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11n-40BW 15Mbps) (5755MHz)

RF Radiated Measurement:

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Measure Level (dBµV /m)	Margin (dB)	Limit (dBµV/m)	Result
Horizontal	5715.000	4.652	50.671	55.323	-12.897	68.220	Pass
Horizontal	5725.000	4.654	56.532	61.186	-17.034	78.220	Pass
Horizontal	5765.290	4.660	88.461	93.121			



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Measure Level (dBµV /m)	Margin (dB)	Limit (dBµV/m)	Result
Vertical	5715.000	5.994	60.277	66.271	-1.949	68.220	Pass
Vertical	5725.000	5.992	65.825	71.818	-6.402	78.220	Pass
Vertical	5752.826	5.987	95.865	101.852			





Product	:	Wireless Storage Drive
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11n-40BW 15Mbps) (5795MHz)

RF Radiated Measurement:

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Measure Level (dBµV /m)	Margin (dB)	Limit (dBµV /m)	Result
Horizontal	5805.072	4.706	87.252	91.958			
Horizontal	5850.000	4.964	46.789	51.753	-26.467	78.220	Pass
Horizontal	5853.333	4.983	48.569	53.552	-24.668	78.220	Pass
Horizontal	5860.000	5.023	45.256	50.279	-17.941	68.220	Pass
Horizontal	5861.594	5.032	47.030	52.062	-16.158	68.220	Pass



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Measure Level (dBµV /m)	Margin (dB)	Limit (dBµV /m)	Result
Vertical	5805.217	5.985	95.224	101.209			
Vertical	5850.000	6.037	49.470	55.507	-22.713	78.220	Pass
Vertical	5855.797	6.043	50.864	56.907	-21.313	78.220	Pass
Vertical	5860.000	6.047	47.568	53.615	-14.605	68.220	Pass
Vertical	5862.319	6.050	49.010	55.060	-13.160	68.220	Pass





Product	:	Wireless Storage Drive
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11ac-80BW-32.5Mbps) (5210MHz)

RF Radiated Measurement (Horizontal):

Channal No	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Dogult
Channel No.	(MHz)	(dB)	(dBµV)	$(dB\mu V/m)$	$(dB\mu V/m)$	$(dB\mu V/m)$	Result
42 (Peak)	5147.971	3.348	53.441	56.789	74.00	54.00	Pass
42 (Peak)	5150.000	3.340	53.047	56.387	74.00	54.00	Pass
42 (Peak)	5196.377	3.167	85.834	89.002			
42 (Average)	5148.261	3.347	39.516	42.863	74.00	54.00	Pass
42 (Average)	5150.000	3.340	39.254	42.594	74.00	54.00	Pass
42 (Average)	5197.971	3.160	75.020	78.181			

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 = 10 Hz, 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	:	Wireless Storage Drive
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11ac-80BW-32.5Mbps) (5210MHz)

RF Radiated Measurement (Vertical):

Channel No	Frequency	Correct Factor	Reading Level	Emission Level	Peak Limit	Average Limit	Dogult
Channel No.	(MHz)	(dB)	(dBµV)	(dBµV/m)	(dBµV/m)	$(dB\mu V/m)$	Result
42 (Peak)	5147.971	5.255	62.975	68.229	74.00	54.00	Pass
42 (Peak)	5150.000	5.260	61.532	66.792	74.00	54.00	Pass
42 (Peak)	5196.377	5.377	94.753	100.131			
42 (Average)	5148.696	5.256	48.420	53.676	74.00	54.00	Pass
42 (Average)	5150.000	5.260	48.282	53.542	74.00	54.00	Pass
42 (Average)	5175.942	5.331	84.041	89.372			

Figure Channel 42:

Vertical (Peak)



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 = 10 Hz, 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	:	Wireless Storage Drive
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11ac-80BW-32.5Mbps) (5210MHz)

Test Frequency	Measurement Level (20dB BW)	Limit	Result
(MHz)	(MHz)	(MHz)	
5210	5247.80	<5250	PASS

NOTE: Accordance with 15.215 requirement.

Agilent Spectru	m Analyzer - Occupied I	BW	16 - 15 - 15 -								
Center Fr	RF 50 Ω AC	GH7 C	SENSE:INT enter Freq: 5.2100	000000 GHz	ALIGNAUTO	11:02:05 / Radio Sto	AM Jan 12, 2016 I: None	Frequency			
oone	Trig: Free Run Avg Hold: 10/10										
	Mkr1 5 2478 GHz										
10 dB/div	Ref 30.00 dBr	m				-12.6	97 dBm				
20.0								Center Fred			
10.0								5.210000000 GHz			
0.00											
-10.0		and the second second second second	alastan 1 trapage	********	water and the second		l 				
-20.0											
-30.0							1				
-40.0 +vv/~v*	VM						Whyman				
-50.0				-							
-60.0											
Center 5.2	21 GHz					Spar	100 MHz	CF Step			
#Res BW	300 kHz		#VBW 1 MH	-Iz		Swee	ep 1.4 ms	10.000000 MHz			
Occup	ied Bandwid	th	Total F	ower	13.2	dBm		<u>Auto</u> Man			
	7	5.432 MHz	-					Freq Offset			
Transm	it Freg Error	13.514 kHz	OBW I	Power	99	.00 %		0 Hz			
x dB Ba	andwidth	79.45 MHz	y xdB		-26.	00 dB					
	and matrix	10.10				00 42					
MSG					STATUS	5					



:	Wireless Storage Drive
:	Band Edge Data
:	No.3 OATS
:	Mode 3: Transmit (802.11ac-80BW-32.5Mbps) (5775MHz)
	:

RF Radiated Measurement:

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Measure Level (dBµV /m)	Margin (dB)	Limit (dBµV /m)	Result
Horizontal	5709.391	4.650	50.920	55.571	-12.649	68.220	Pass
Horizontal	5715.000	4.652	50.714	55.366	-12.854	68.220	Pass
Horizontal	5721.565	4.654	53.911	58.564	-19.656	78.220	Pass
Horizontal	5725.000	4.654	52.246	56.900	-21.320	78.220	Pass
Horizontal	5798.087	4.674	83.931	88.606			
Horizontal	5850.000	4.964	52.974	57.938	-20.282	78.220	Pass
Horizontal	5854.087	4.988	54.071	59.059	-19.161	78.220	Pass
Horizontal	5860.000	5.023	50.720	55.743	-12.477	68.220	Pass
Horizontal	5865.565	5.056	53.100	58.156	-10.064	68.220	Pass



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Measure Level (dBµV /m)	Margin (dB)	Limit (dBµV /m)	Result
Vertical	5715.000	5.994	60.699	66.693	-1.527	68.220	Pass
Vertical	5722.609	5.993	64.412	70.405	-7.815	78.220	Pass
Vertical	5725.000	5.992	63.268	69.261	-8.959	78.220	Pass
Vertical	5761.217	5.985	92.371	98.356			
Vertical	5850.000	6.037	59.659	65.696	-12.524	78.220	Pass
Vertical	5854.435	6.042	59.778	65.819	-12.401	78.220	Pass
Vertical	5860.000	6.047	56.156	62.203	-6.017	68.220	Pass
Vertical	5869.043	6.058	59.306	65.363	-2.857	68.220	Pass



7. Occupied Bandwidth

7.1. Test Equipment

	Equipment	Manufacturer Model No./Serial No.		Last Cal.	
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun., 2015	
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun., 2015	
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2015	

Note:

- 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
- 2. The test instruments marked with "X" are used to measure the final test results.

7.2. Test Setup



7.3. Limits

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

7.4. .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.

7.5. Uncertainty

 \pm 150Hz



7.6. Test Result of Occupied Bandwidth

Product	:	Wireless Storage Drive
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11n-20BW 7.2Mbps)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
149	5745	17700	>500	Pass
157	5785	17700	>500	Pass
165	5825	17700	>500	Pass

🚺 Keysight S	pectrum A	nalyzer - Swe	pt SA								
Center F	_R ⊧ Freq 5	50 Ω .74500	AC 0000 GH	z	SEI	NSE:INT	Avg Type	ALIGN AUTO : Log-Pwr	04:08:40 PI TRAC	M Oct 07, 2015	Frequency
10 dB(div	Ref (Offset 0.5	dB Bm	NO: Fast G Gain:Low	#Atten: 3	0 dB		Mkr	2 5.736 -5.	20 GHz	Auto Tune
10.5 0.500		20.50 0		2	1 1	Lange and all	maring 3			-5.05 dBm	Center Freq 5.745000000 GHz
-19.5 -29.5 -39.5	www.	reduces W/V	wyongen	J.				and along a low for	Mary Martin Japan	mpohrmus.	Start Freq 5.720000000 GHz
-49.5 -59.5 -69.5											Stop Freq 5.770000000 GHz
Center 5 #Res BV	Center 5.74500 GHz Span 50.00 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 4.800 ms (1001 pts)								CF Step 5.000000 MHz Auto Man		
MXR MODE 1 N 2 N 3 N 4 5 6 7 8 9 10 11 ✓	TRC SCL 1 f 1 f 1 f		× 5.742 11 5.736 2 5.753 9	5 GHz 0 GHz 0 GHz	Y 0.95 dł -5.06 dł -6.61 dł	Sm Sm Sm Sm Sm Sm Sm Sm Sm Sm Sm Sm Sm S			FUNCTIO		Freq Offset 0 Hz
MSG								STATUS			

Figure Channel 149:


XX RL RF 50 Ω AC SENSE:INT ALIGN AUTO 04:10:44 PM Oct 07,2015 CM F 70 C C Aug Type Log D	
	Frequency
Center Fred 5.785000000 GHZ Avg Type. Log-Pwr Hode 123456	Trequency
PNO: Fast Ing: tree kun Ing: tree	
Ref Officet 0.5 dB Mkr2 5.776 20 GHz	Auto Tune
10 dB/div Bef 20.50 dBm -5.71 dBm	
10.5	Center Fred
• 2 (2)	Conter i reg
0.500	5.785000000 GHz
-9.50	
-19.5	Start Freq
-29.5	5 76000000 GHz
mal market maller a	0.700000000000112
-33.5	
-49.5	
705	Stop Freq
-39.5	5.810000000 GHz
-69.5	
Center 5.78500 GHz Span 50.00 MHz	CF Step
#Res BW 100 kHz #VBW 300 kHz Sweep 4,800 ms (1001 pts)	5.000000 MHz
	Auto Man
MKR MODE TRC SCL X Y FUNCTION WIDTH FUNCTION VALUE	
1 N 1 f 5.782 15 GHz 0.75 dBm	
2 N 1 t 5.//6 20 GHz -5./1 dBm	Frea Offset
3 N I I 3./9390 GHZ -0./10 BHI	
5	0 Hz
6	
7	
MSG STATUS	

Figure Channel 157:

Figure Channel 165:

🚺 Keysight Sp	ectrum A	analyzer - Swe	pt SA								
Center F	req 5	50 Ω 5.82500	AC 0000 GH	z	SE Trig: Fre	NSE:INT	Avg Typ	ALIGN AUTO	04:13:16 P TRAC	M Oct 07, 2015	Frequency
10 dB/div	Ref Ref	Offset 0.5 20.50 d	dB IBm	IO: Fast ⊆ Sain:Low	#Atten: 3	0 dB		Mkr	2 5.816 -5.	20 GHz 46 dBm	Auto Tune
Log 10.5 0.500 -9.50				2	numeran and	h hereithere	mmmm	3		-5.00 dBm	Center Freq 5.825000000 GHz
-19.5 -29.5 -39.5	WWW AC	MANNAN MAN	William Waltan and	pd -				h solar mary	Luchand all program	Maner a	Start Freq 5.80000000 GHz
-49.5 -59.5 -69.5										a Junit	Stop Freq 5.85000000 GHz
Center 5. #Res BW	8250 100	0 GHz kHz		#VB	W 300 kHz			Sweep 4	Span 5 .800 ms (0.00 MHz 1001 pts)	CF Step 5.000000 MHz Auto Mar
MKR MODE T 1 N 2 2 N 3 3 N 4 5 6 7 7 8 9 9 10 11	RC SCL 1 f 1 f 1 f 1 f 		× 5.822 14 5.816 20 5.833 90	5 GHz D GHz D GHz	Y 1.00 d -5.46 d -6.70 d	Bm Bm Bm Bm	FU	NCTION WIDTH	FUNCTI	ON VALUE	Freq Offset
MSG								STATUS	5		



Product	:	Wireless Storage Drive
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11n-40BW 15Mbps)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
151	5755	36700	>500	Pass
159	5795	36600	>500	Pass

Figure Channel 151:

🚺 Keysight Spec	trum Analyzer - Sw	ept SA							
Center Fr	RF 50 Ω eq 5.75500	AC 00000 GH	z	SENSE:I	NT Avg	ALIGN AUTO	04:21:48 P TRAC	M Oct 07, 2015	Frequency
10 dB/div	Ref Offset 0.0 Ref 20.50	5 dB dBm	NO: Fast ⊆ Gain:Low	#Atten: 30 dE		M	r2 5.73 -11.	6 7 GHz 14 dBm	Auto Tune
Log 10.5 0.500 -9.50			¢ ² ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		1	~~\} ³	2	-8.13 dBm	Center Freq 5.755000000 GHz
-19.5 -29.5 -39.5	N. W. W. B.	w/manthe		V		un un un un un	1mm as specimenter	alt all hours	Start Fred 5.705000000 GHz
-49.5	-								Stop Frec 5.805000000 GHz
Center 5.7 #Res BW	5500 GHz 100 kHz		#VB\	N 300 kHz		Sweep 9	Span 1 0.600 ms (00.0 MHz 1001 pts)	CF Step 10.000000 MHz Auto Mar
MKR MODE Training 1 N 1 2 N 1 3 N 1 4	F f f f	x 5.757 / 5.736 7 5.773 4	2 GHz 7 GHz 4 GHz	Y -2.13 dBm -11.14 dBm -11.79 dBm	FUNCTION	FUNCTION WIDTH		ON VALUE	Freq Offset



				Figur	C Cha	muer 1.	<i>.</i>			
🍺 Keysight S	pectrum Analyze	r - Swept SA								
Center F	_{RF} req 5.79	50 Ω AC 5000000 GH	z	SEN	ISE:INT	Avg Type	ALIGN AUTO E: Log-Pwr	04:33:10 P	M Oct 07, 2015	Frequency
		P IF	NO: Fast G Gain:Low	#Atten: 30	dB			DE		
10 dB/div	Ref Offs Ref 20.	et 0.5 dB 50 dBm					Mk	r2 5.770 -11.4	67 GHz 48 dBm	Auto Tune
10.5					. 1					Center Freq
0.500			A2 marsh	and showing the	materia	manno	3	· · · · · · · · · · · · · · · · · · ·	0.00 dBa	5.795000000 GHz
-9.50			1						-8.02 dBm	
-19.5			/			1				Start Freq
-39.5	AL PROVE BULLER OF DE	Abalintante					AND	Mulushingho	ML	5.745000000 GHz
-49.5								- 14	all with the second	Stop From
-59.5										5.845000000 GHz
-69.5										
Center 5 #Res BW	.79500 Gł / 100 kHz	łz	#VBW	/ 300 kHz		1	Sweep 9	Span 1 .600 ms (00.0 MHz 1001 pts)	CF Step 10.000000 MHz
MKR MODE	TRC SCL	X		Y	FUN	CTION FUN	ICTION WIDTH	FUNCTION	ON VALUE	<u>Auto</u> Man
1 N 2 N	1 f	5.776	7 GHz	-11.48 dE	sm Bm					Freg Offset
4		0.010	J GHZ	-0.22 UE	2111					0 Hz
6										
8										
10 11										
MSG				m			STATUS		F	

Figure Channel 159:



Product	:	Wireless Storage Drive
Test Item	:	Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 3: Transmit (802.11ac-80BW-32.5Mbps)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
155	5775	76500	>500	Pass

Figure Channel 155:

🗾 Keysight Sp	ectrum Analyzer	- Swept SA						
Center F	RF 1	5000000 GHz	SEN		ALIGN AUTO g Type: Log-Pwr	04:01:14 P	MOct 07, 2015	Frequency
10 dB(div	Ref Offse	t 0.5 dB	Fast Fast Fast Fast Fast Fast Fast Fas	0 dB	M	(r2 5.73) -12.	6 8 GHz	Auto Tune
Log 10.5 0.500 -9.50	2. Mar	deployment of the second	t entre angre particular spectra to and	الروبية معقد معقد معقد معقد مع	1	mermon ():	3 -11.41 dBm	Center Freq 5.775000000 GHz
-19.5 -29.5 -39.5	mul						YM Jahnhamana	Start Freq 5.725000000 GHz
-49.5 -59.5 -69.5								Stop Freq 5.825000000 GHz
Center 5. #Res BW	77500 GH 100 kHz	z	#VBW 300 kHz	L	Sweep 9	Span 1 .600 ms (00.0 MHz 1001 pts)	CF Step 10.000000 MHz Auto Mar
MKR Mode T 1 N - 2 N - 3 N - 4 - - 5 - - 6 - - 7 - - 8 - - 9 - - 10 - -	RC SCL 1 f 1 f 1 f 1 f 1 f 1 f 1 f 1 f 1 f 1 f	X 5.798 0 G 5.736 8 G 5.813 3 G	Y -5.41 dE Hz -5.21 dE Hz -12.34 dE	FUNCTION 3m 3m	FUNCTION WIDTH	FUNCTIO		Freq Offse

8. Frequency Stability

8.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun., 2015
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun., 2015
Х	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2015

Note:

- 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
- 2. The test instruments marked with "X" are used to measure the final test results.

8.2. Test Setup



8.3. 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

8.4. 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.

8.5. Uncertainty

± 150 Hz



8.6. Test Result of Frequency Stability

Product	:	Wireless Storage Drive
Test Item	:	Frequency Stability
Test Site	:	Temperature Chamber
		\mathbf{C} · W

Test Mode : Carrier Wave

Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
		36	5180.0000	5180.0066	-0.0066
		38	5190.0000	5190.0074	-0.0074
		44	5220.0000	5220.0059	-0.0059
	Vnom (110)V	46	5230.0000	5230.0065	-0.0065
Tnom (2 0)°C		48	5240.0000	5240.0063	-0.0063
1 nom (20) C		149	5745.0000	5745.0071	-0.0071
		151	5755.0000	5755.0081	-0.0081
		157	5785.0000	5785.0076	-0.0076
		159	5795.0000	5795.0074	-0.0074
		165	5825.0000	5825.0083	-0.0083

Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
Tmax (50)°C	Vmax (126.5)V	36	5180.0000	5180.0043	-0.0043
		38	5190.0000	5190.0068	-0.0068
		44	5220.0000	5220.0044	-0.0044
		46	5230.0000	5230.0041	-0.0041
		48	5240.0000	5240.0039	-0.0039
		149	5745.0000	5745.0055	-0.0055
		151	5755.0000	5755.0063	-0.0063
		157	5785.0000	5785.0059	-0.0059
		159	5795.0000	5795.0061	-0.0061
		165	5825.0000	5825.0064	-0.0064



Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
Tmax (50)°C	Vmin (93.5)V	36	5180.0000	5180.0099	-0.0099
		38	5190.0000	5190.0101	-0.0101
		44	5220.0000	5220.0111	-0.0111
		46	5230.0000	5230.0105	-0.0105
		48	5240.0000	5240.0097	-0.0097
		149	5745.0000	5745.0093	-0.0093
		151	5755.0000	5755.0106	-0.0106
		157	5785.0000	5785.0097	-0.0097
		159	5795.0000	5795.0109	-0.0109
		165	5825.0000	5825.0102	-0.0102

Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
Tmin (-10)℃	Vmax (93.5)V	36	5180.0000	5180.0099	-0.0099
		38	5190.0000	5190.0101	-0.0101
		44	5220.0000	5220.0111	-0.0111
		46	5230.0000	5230.0105	-0.0105
		48	5240.0000	5240.0097	-0.0097
		149	5745.0000	5745.0093	-0.0093
		151	5755.0000	5755.0106	-0.0106
		157	5785.0000	5785.0097	-0.0097
		159	5795.0000	5795.0109	-0.0109
		165	5825.0000	5825.0102	-0.0102

Product	•	Wireless Storage Drive
Test Item	:	Frequency Stability
Test Site	•	Temperature Chamber

Test Mode : Carrier Wave (ac)

Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
T (20)°0		42	5210.0000	5210.0079	-0.0079
Thom (20) C	Vnom (110)V	155	5775.0000	5775.0067	-0.0067
Tmax (50)°C	Vmax (126.5)V	42	5210.0000	5210.0066	-0.0066
		155	5775.0000	5775.0052	-0.0052
Tmax (50)°C	Vmin (93.5)V	42	5210.0000	5210.0066	-0.0066
		155	5775.0000	5775.0052	-0.0052
Tmin (-10)°C	Vmax (126.5)V	42	5210.0000	5210.0099	-0.0099
		155	5775.0000	5775.0101	-0.0101
Tmin (-10)℃	Vmin (93.5)V	42	5210.0000	5210.0099	-0.0099
		155	5775.0000	5775.0101	-0.0101



9. EMI Reduction Method During Compliance Testing

No modification was made during testing.



Attachment 1: EUT Test Photographs



Attachment 2: EUT Detailed Photographs