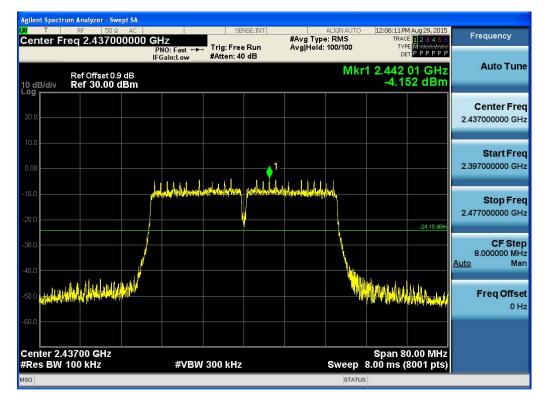
Agilent Spectrum Analyzer - Swept SA					
Center Freq 12.5000000	0 GHz	#Avg Type		12:04:29 PM Aug 29, 2015 TRACE 1 2 3 4 5 6	Frequency
Ref Offset 0.9 dB	PNO: Fast ↔ Trig: Free IFGain:Low #Atten: 30				Auto Tune
10 dB/div Ref 20.90 dBm				-53.485 dBm	Center Freq 12.50000000 GHz
.9.10					Start Freq 10.000000000 GHz
-19.1				-24,10 dBm	Stop Freq 15.00000000 GHz
-49.1				1	CF Step 500.000000 MHz <u>Auto</u> Man
-59.1 total and the second	ed har na dhlata gha en ghlann dha na thrath a dha at e na maraidh dh Anna agu ga cagar ga a ga an ga an da anna dan an sao an	di alga da di Alla da da sa sa di paggina di Mana di Para da sa sa sa di paggina di Para da sa sa di paggina d Para da sa	a da ana ang tang ang ang ang ang ang ang ang ang ang	an de la de la seconda de la dela de la de la Referencia de la decensión de la	Freq Offset 0 Hz
Start 10.000 GHz #Res BW 100 kHz	#VBW 300 kHz			Stop 15.000 GHz 478 ms (8001 pts)	
MSG			STATUS		

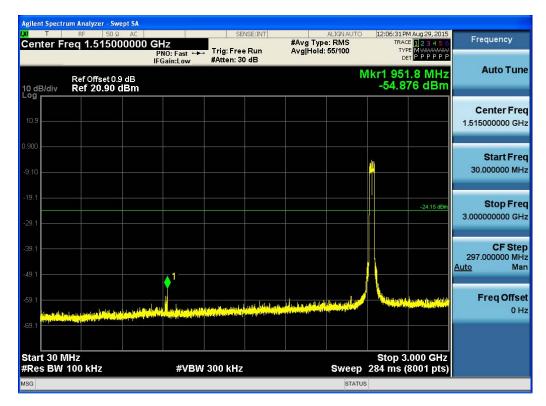
(Plot 4.6.4 A5: Channel 3: 2422MHz @ 802.11n HT40)

	RF 50 Ω AC		SENSE:INT		ALIGN AUTO	12:04:40 PM /		Eroquanett
Center F	req 20.00000000	PNO: Fast ++ Trig	Free Run en: 32 dB	#Avg Typ Avg Hold:		TYPE	123456 M WWWWW PPPPPP	Frequency
0 dB/div	Ref Offset 0.9 dB Ref 22.90 dBm				Mkr1	24.320 0 -44.73		Auto Tui
9								Center Fre
2.9								20.00000000 G
.90								Start Fr
.10								15.00000000 G
7.1							-24.10 dBm	Stop Fr
7.1								25.000000000 G
7.1							▲ 1	CF St 1.00000000 G
7.1	ر مراجع المراجع	alla dissa di secoli di coli del di di di secoli di	و و المراجع ا		u tert sold to billions	and the strength of the strength os strength of the strength os strength of the strength os strength o		<u>Auto</u> M
7.1								Freq Offs 0
i7.1								
tart 15.0	00 GHz 100 kHz	#VBW 300			Sweep	Stop 25.0 956 ms (80	00 GHz	

(Plot 4.6.4 A6: Channel 3: 2422MHz @ 802.11n HT40)







(Plot 4.6.4 B2: Channel 6: 2437MHz @ 802.11n HT40)

Agiler	nt Spectri	ım Analyzer - Sv	wept SA								
Cer	ter Fr	req 4.0000				NSE:INT	#Avg Type		TRAG	M Aug 29, 2015 E 1 2 3 4 5 6	Frequency
	_	Ref Offset 0	9 dB	PNO: Fast	#Atten: 30		Avg Hold:		₀ 1 3.663	00 GHz	Auto Tune
10 di Log	B/div	Ref 20.90					,		-54.8	43 dBm	
10.9											Center Freq 4.000000000 GHz
0.900											
-9,10			а.			-					Start Freq 3.000000000 GHz
-19.1										-24.15 dBm	Stop Freq
-29.1										-24.15 UDII	5.00000000 GHz
-39.1 -49.1											CF Step 200.000000 MHz <u>Auto</u> Man
-49.1											
-59.1	aliki sus aliki Marina ji katal							deliking kenya pikit dan Kenya pananganangan			Freq Offset 0 Hz
-69.1											
Star	t 3.00	0 GHz							Stop 5	.000 GHz	
		100 kHz		#VBW	300 kHz			Sweep		8001 pts)	
MSG								STATUS	5		

(Plot 4.6.4 B3: Channel 6: 2437MHz @ 802.11n HT40)

Т	RF 50 Ω AC		SE	NSE:INT		ALIGN AUTO		4 Aug 29, 2015	Francisco
enter Fre	eq 7.500000000	PNO: Fast ↔ IFGain:Low	. Trig: Free #Atten: 30		#Avg Typ Avg Hold:		TYF	E 1 2 3 4 5 6 E MWWWWW T P P P P P P	Frequency
	Ref Offset 0.9 dB Ref 20.90 dBm					Mkr1		75 GHz 26 dBm	Auto Tur
09									Center Fre
10.9									7.500000000 Gł
900									Start Fre
9.10									5.000000000 GI
19.1								-24.15 dBm	Stop Fr
29.1								<u>.</u>	10.00000000 G
39.1									CF Sto 500.000000 M
49.1									Auto M
59.1 Matra da	and and a statistic of the last of the state		وبالعامة والمرادع والمسلية	auticalisesters.	a di dalar dan milika				Freq Offs
A REAL PROPERTY.	and a property of the second	a la contra de la co	and the second	When Live Line South and the			ed a second film	a an	01
59.1									
tart 5.000	GHz 00 kHz		300 kHz					.000 GHz 8001 pts)	

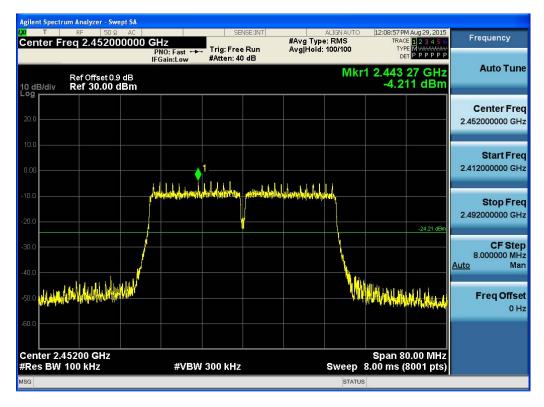
(Plot 4.6.4 B4: Channel 6: 2437MHz @ 802.11n HT40)

Agilent Spectr	um Analyzer - Swept SA								
	RF 50 Ω AC		SEM	ISE:INT	#Avg Type			M Aug 29, 2015	Frequency
Center Fi	eq 12.500000	DUU GHZ PN0: Fast ↔⊷	Trig: Free		Avg Hold:		TYF	E M WARANAMAN	
		IFGain:Low	#Atten: 30	dB				TPPPPP	
	Ref Offset 0.9 dB					Mkr1 1	4.630 0	00 GHz	Auto Tune
10 dB/div	Ref 20.90 dBm						-52.5	39 dBm	
10.9								æ	Center Freq
10.9									12.500000000 GHz
0.900									
0.500									Start Freq
-9.10	9 S		,					es.	10.00000000 GHz
9.10									
-19.1									
								-24.15 dBm	Stop Freq
-29.1									15.00000000 GHz
1.0000									
-39.1									CF Step
									500.000000 MHz
-49.1								1	<u>Auto</u> Man
							. Lat a V	Log draw Loweble	
-59.1	a a la talan da ka da ka	ويلميك والتر إلافتنان والملاطقين	and the state of the	u Mile Antonia la	a all a shadha all		i i a del de la del de la della de la della de la della d I della de	and the state of the	Freq Offset
and second be	يسبر والمرجات والمراجعة الألفا المؤالمة مقرمية ال	and the second s	and a set of the set o	A LANDARIA (IN	Contraction of the local division of the loc				0 Hz
-69.1									
Start 10.0							Oton 45		
#Res BW		#VBW	300 kHz			Sweep		.000 GHz 8001 pts)	
MSG						STATUS		prov	
						onaroc			

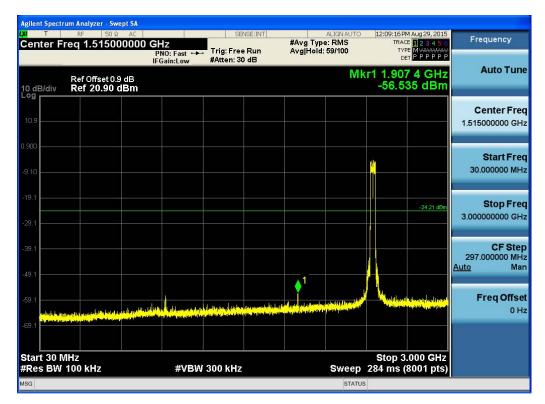
(Plot 4.6.4 B5: Channel 6: 2437MHz @ 802.11n HT40)

U T	RF 50 Ω AC		SENSE:INT		ALIGN AUTO	12:07:14 PM Aug 29, 201	
Center F	req 20.00000000	PNO: Fast +++ Irig:	Free Run n: 32 dB	#Avg Typ Avg Hold:		TRACE 12345 TYPE MWWWW DET PPPP	P
0 dB/div	Ref Offset 0.9 dB Ref 22.90 dBm				Mkr1	24.860 00 GH -45.030 dBn	
og _							Center Fre
12.9							20.00000000 GH
2.90							Start Fre
7.10							15.00000000 GH
17.1						-24.15 dB	Stop Fre
27.1							25.000000000 GI
37.1						;	CF Sto 1.000000000 G
47.1	وفي الله ال		مانين د د د	ر	والأنفاص فرياله أدرواريا		Auto M
57.1		A Dispersion of the second		in painting of the second	orthographic for the party		Freq Offs
57.1							01
Start 15.0						Stop 25.000 GH:	
	100 kHz	#VBW 300 k	Hz		Sweep	956 ms (8001 pts	1

(Plot 4.6.4 B6: Channel 6: 2437MHz @ 802.11n HT40)



(Plot 4.6.4 C1: Channel 9 : 2452MHz @ 802.11n HT40)



(Plot 4.6.4 C2: Channel 9: 2452MHz @ 802.11n HT40)

Agilent Spect	trum Analyzer - Swe	pt SA							
Center F	RF 50 Ω Freq 4.00000	0000 GHz			#Avg Type Avg[Hold:		TRA	M Aug 29, 2015 CE 1 2 3 4 5 6 PE M WWWWW	Frequency
10 dB/div	Ref Offset 0.9 Ref 20.90 d	IFGa dB): Fast 🔸	#Atten: 30	Avgirioid.		□ 1 3.676	50 GHz 38 dBm	Auto Tune
10.9									Center Freq 4.000000000 GHz
-9.10									Start Freq 3.000000000 GHz
-19.1								-24.21 dBm	Stop Freq 5.000000000 GHz
-39.1			1						CF Step 200.000000 MHz <u>Auto</u> Man
. and the pre-		a da stadu da stadul da stadu			a fallan a shadadin Taya a na saya na sa	d a da la popula, stil Protoco a como como como como como como como	(, hijedditernika disk Geniged (, series) (Freq Offset 0 Hz
-69.1 Start 3.00			41/D14	200 1/11-		0		.000 GHz	
#Res BW	100 kHz		#VBW	300 kHz		Sweep		(8001 pts)	

(Plot 4.6.4 C3: Channel 9: 2452MHz @ 802.11n HT40)

″ ⊤ Center F	RF 50 reg 7.5000	Ω AC	-Iz		NSE:INT	#Avg Typ		TRAC	Aug 29, 2015	Frequency
		Р	NO: Fast 🔸 Gain:Low	#Atten: 30		Avg Hold:		DE	ЕМ илилии ТРРРРРР	
0 dB/div	Ref Offset (Ref 20.90	0.9 dB I dBm					Mkr1		75 GHz 08 dBm	Auto Tu
.og										Center Fr
10.9		2		·					<u>e</u>	7.50000000 G
900										
										Start Fr
9.10									<u></u>	5.00000000 G
19.1										Stop Fr
									-24.21 dBm	10.000000000 G
29.1										
9.1										CF St 500.000000 M
49.1										Auto M
				🔶	1					
i9.1 <mark>de estant</mark>			lundin anda	وأبار ويدا الرور ومع			had all a state of the state of the	وبالماريين واربعان	philade and the fillent	Freq Offs
59.1						The second s	a balan sa	normality () are shifting a	and the second second second	0
tart 5.00	0 GHz							Stop 10.	000 GHz	
	100 kHz		#VBW	300 kHz			Sweep		8001 pts)	

(Plot 4.6.4 C4: Channel 9: 2452MHz @ 802.11n HT40)

Agilent Spectrum Analyzer - Swept SA					
M T RF 50Ω AC Center Freq 12.50000000	0 GHz	NSE:INT #Avg Typ		12:09:49 PM Aug 29, 2015 TRACE 1 2 3 4 5 6	Frequency
Ref Offset 0.9 dB	PNO: Fast +++ Trig: Free IFGain:Low #Atten: 30			түре Милинин Deт Р Р Р Р Р Р 4.877 500 GHz	Auto Tune
10 dB/div Ref 20.90 dBm				-52.788 dBm	
10.9					Center Freq 12.500000000 GHz
-9.10					Start Freq 10.000000000 GHz
-19.1				-24.21 dBm	Stop Freq 15.00000000 GHz
-39.1				1	CF Step 500.000000 MHz <u>Auto</u> Man
-59.1 approximation the statistic for the statistic stat	n di gan da ing di kan di kan di Kana da kakak di Kana. Kana yang manggan sa kan di kana di kan	hin fisfama des, ante segulativant dela di Pretaminane gagi danga metara principati			Freq Offset 0 Hz
-69.1					
Start 10.000 GHz #Res BW 100 kHz	#VBW 300 kHz			Stop 15.000 GHz 178 ms (8001 pts)	
MSG			STATUS		

(Plot 4.6.4 C5: Channel 9: 2452MHz @ 802.11n HT40)



(Plot 4.6.4 C6: Channel 9: 2452MHz @ 802.11n HT40)

4.7 6dB Bandwidth

TEST CONFIGURATION



TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with RBW=100 KHz and VBW=300KHz. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB. According to KDB558074 D01 V03 for one of the following procedures may be used to determine the modulated DTS device signal bandwidth.

- 1. Set RBW = 100 kHz.
- 2. Set the video bandwidth (VBW) \geq 3 RBW.
- 3. Detector = Peak.

4. Trace mode = max hold.

- 5. Sweep = auto couple.
- 6. Allow the trace to stabilize.

7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

<u>LIMIT</u>

For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

TEST RESULTS

4.7.1 801.11b Test Mode

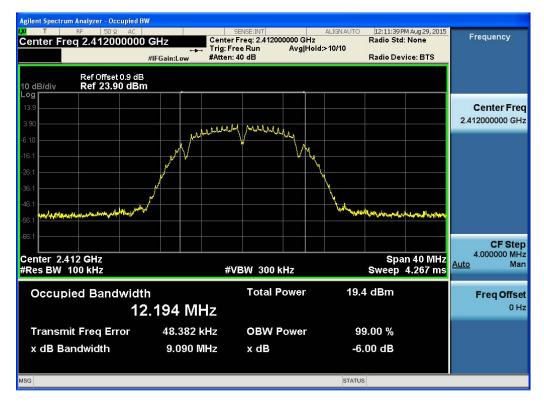
A. Test Verdict

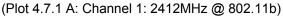
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Refer to Plot	Limits (kHz)	Verdict
1	2412	9.090	Plot 4.7.1 A	≥500	PASS
6	2437	9.516	Plot 4.7.1 B	≥500	PASS
11	2462	9.552	Plot 4.7.1 C	≥500	PASS

Note:

1. For 802.11b mode at finial test to get the worst-case emission at 1Mbps.

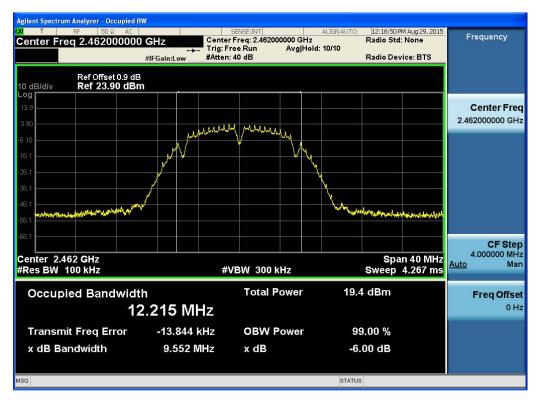
2. The test results including the cable lose.







(Plot 4.7.1 B: Channel 6: 2437MHz @ 802.11b)



(Plot 4.7.1 C: Channel 11: 2462MHz @ 802.11b)

4.7.2 801.11g Test Mode

A. Test Verdict

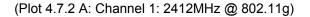
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Refer to Plot	Limits (kHz)	Verdict
1	2412	16.39	Plot 4.7.2 A	≥500	PASS
6	2437	16.35	Plot 4.7.2 B	≥500	PASS
11	2462	16.37	Plot 4.7.2 C	≥500	PASS

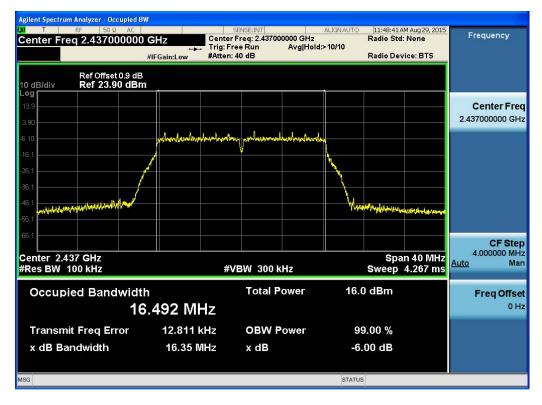
Note:

1. For 802.11g mode at finial test to get the worst-case emission at 6Mbps.

2. The test results including the cable lose.

	n Analyzer - Occupied BW							
Center Ere	RF 50 Ω AC eq 2.412000000 0	2Hz	SENSE:INT Center Freg: 2.4	12000000 GHz	ALIGN AUTO	11:45:44 / Radio Std	AM Aug 29, 2015 I: None	Frequency
Contor inte		++-	Trig: Free Run #Atten: 40 dB	Avg Hold	:>10/10	Radio Dev	uiae: PTC	
	#	IFGain:Low	#Atten: 40 dB			Radio Dev	Vice: B15	
10 dB/div	Ref Offset 0.9 dB Ref 23.90 dBm	_			_			
Log 13.9								Contor From
								Center Freq 2.412000000 GHz
3.90		1. 1. 1						2.412000000 0112
-6.10		polandouslawsla	myterserver provident	himlundund	n.			
-16.1		/	Y					
-26.1								
-36.1	/				<u> </u>			
-46.1					1			
-56.1	achorachine has been been been been been been been bee				244	Maintheam approved	mannihlamann	
-66,1								CF Step
Center 2.4	12 GHz					Spa	an 40 MHz	4.000000 MHz
#Res BW 1			#VBW 30	00 kHz		Sweep	4.267 ms	<u>Auto</u> Man
Occupi	ied Bandwidth		Tota	al Power	15.	9 dBm		Freq Offset
	16.	472 MH	z					0 Hz
Transm	Transmit Freq Error 20.509 kHz			V Power	9	9.00 %		
x dB Ba	x dB Bandwidth 16.39 MHz			3	-6	.00 dB		
MSG					STATU	s		1





(Plot 4.7.2 B: Channel 6: 2437MHz @ 802.11g)

Agilent Spectrum Analyzer - Occupied BW					
Center Freq 2.462000000 G		INSE:INT req: 2.462000000 GHz	ALIGNAUTO 11:51:21 A Radio Std	M Aug 29, 2015 None	Frequency
	Gain:Low #Atten: 4		10/10 Radio Dev	ice: BTS	
#IF	Gain:Low #Atten: 4		Radio Dev	ice. DT3	
Ref Offset 0.9 dB 10 dB/div Ref 23.90 dBm					
Log 13.9					Center Freq
					2.462000000 GHz
3.90					
-6.10	get and the second s	and the state of the second	4		
-16.1		İ	W.		
-26.1			N.		
-36.1					
-46.1			Mar Alexandran		
-56.1			C. C. C. ALLERSON DATE (AND	Work Carlywine wys	
-66.1			7		
					CF Step 4.000000 MHz
Center 2.462 GHz #Res BW 100 kHz	#VI	BW 300 kHz		n 40 MHz 4.267 ms	Auto Man
Occupied Bandwidth		Total Power	15.6 dBm		Freq Offset
					0 Hz
16.510 MHz					
Transmit Freq Error	6.236 kHz	OBW Power	99.00 %		
x dB Bandwidth	16.37 MHz	x dB	-6.00 dB		
MSG			STATUS		

(Plot 4.7.2 C: Channel 11: 2462MHz @ 802.11g)

4.7.3 801.11n HT20 Test Mode

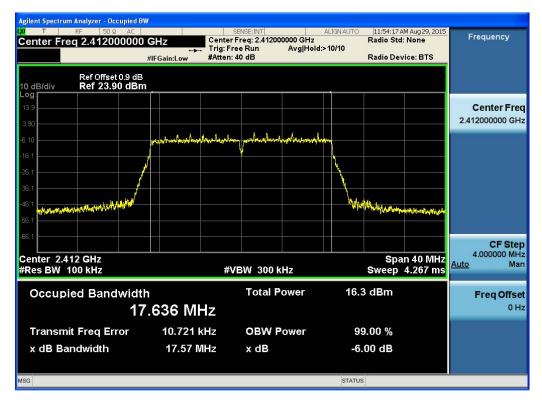
A. Test Verdict

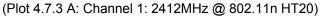
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Refer to Plot	Limits (kHz)	Verdict
1	2412	17.57	Plot 4.7.3 A	≥500	PASS
6	2437	17.58	Plot 4.7.3 B	≥500	PASS
11	2462	17.57	Plot 4.7.3 C	≥500	PASS

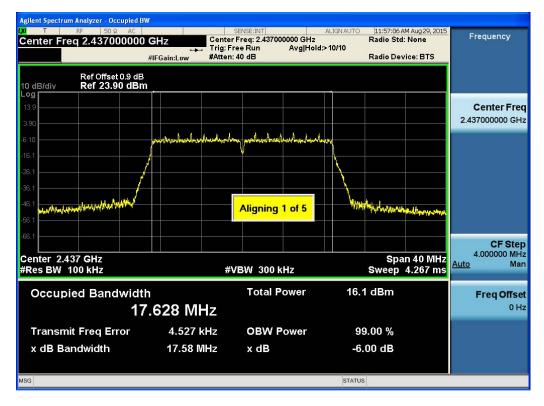
Note:

1. For 802.11n HT20 mode at finial test to get the worst-case emission at 6.5Mbps.

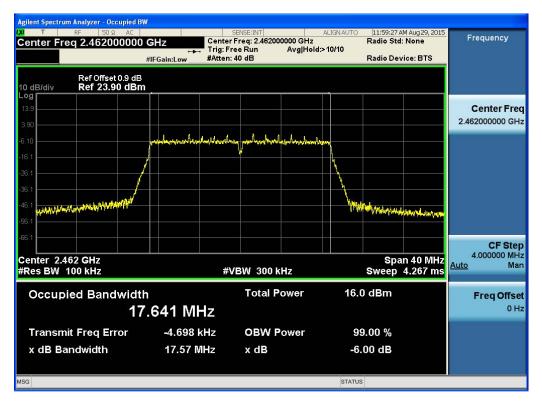
2. The test results including the cable lose.







(Plot 4.7.3 B: Channel 6: 2437MHz @ 802.11n HT20)



(Plot 4.7.3 C: Channel 11: 2462MHz @ 802.11n HT20)

4.7.4 801.11n HT40 Test Mode

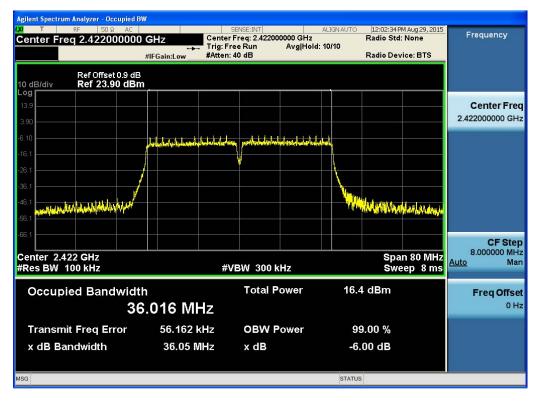
A. Test Verdict

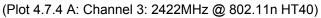
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Refer to Plot	Limits (kHz)	Verdict
3	2422	36.05	Plot 4.7.4 A	≥500	PASS
6	2437	36.07	Plot 4.7.4 B	≥500	PASS
9	2452	36.07	Plot 4.7.4 C	≥500	PASS

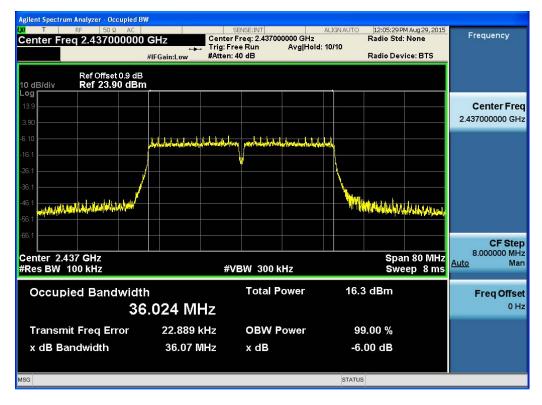
Note:

1. For 802.11n HT40 mode at finial test to get the worst-case emission at 13.5Mbps.

2. The test results including the cable lose.







(Plot 4.7.3 B: Channel 6: 2437MHz @ 802.11n HT40

Agilent Spectrum Analyzer - Occupied B M T RF 50 AC Center Freq 2.452000000	GHz Cen →→ Trig	sense:int ter Freq: 2.452000000 GHz ; Free Run Avg Ho en: 40 dB	ALIGN AUTO : Id: 10/10	12:07:55 PM Aug: Radio Std: Non Radio Device: E	e Frequenc	У
Ref Offset 0.9 dB 10 dB/div Ref 23.90 dBn						
13.9 3.90					Center 2.45200000	
-6:10	phalicher to a standard and the standard	halanna jaralachalachalachalachala	, and the second second			
-26.1						
-46.1				alitti faar had tubaha dadhaan	Anglute:	
-66,1					8 00000	Step
Center 2.452 GHz #Res BW 100 kHz		#VBW 300 kHz		Span 80 Sweep	Auto	Man
Occupied Bandwidt	հ 6.020 MHz	Total Power	16.2	2 dBm	Freq O	o ffset 0 Hz
Transmit Freq Error	9.983 kHz	OBW Power	99	9.00 %		
x dB Bandwidth	36.07 MHz	x dB	-6.	00 dB		
MSG			STATUS			

(Plot 4.7.4 C: Channel 9: 2452MHz @ 802.11n HT40)

4.8 Antenna Requirement

Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (c), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

Refer to statement below for compliance.

The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

Measurement

The antenna gain of the complete system is calculated by the difference of radiated power in EIRP and the conducted power of the module.For normal WLAN devices, the DSSS mode is used.

Measurement parameters

Measurement parameter		
Detector:	Peak	
Sweep time:	Auto	
Resolution bandwidth:	1MHz	
Video bandwidth:	3MHz	
Trace-Mode:	Max hold	

Limits

FCC	IC			
Antenna Gain				
6 dBi				

Results

T _{nom}	V _{nom}	Lowest Channel 2412 MHz	Middle Channel 2437 MHz	Highest Channel 2462 MHz	
Conducted power [dBm] Measured with DSSS modulation		10.44	10.09	10.41	
Conducted power [dBm] Measured with DSSS modulation		11.69	11.62	11.63	
Gain [dBi] Calculated		1.25	1.53	1.22	
Measurement uncertainty		\pm 0.6 dB (cond.) / \pm 2.56 dB (rad.)			

5 <u>Test Setup Photos of the EUT</u>

Please refer to separated files for Test Setup Photos of the EUT.

6 External Photos of the EUT

Please refer to separated files for External Photos of the EUT.

7 Internal Photos of the EUT

Please refer to separated files for Internal Photos of the EUT.

.....End of Report.....