



## Channel 64: (Chain A)

## Channel 100: (Chain A)





UN RL	RF 50 Ω	AC	SENSE:INT	ALIGNAUTO	05:10:55 PM Aug 21. 2015			
Center Fre	q 5.580000	000 GHz PNO: Fast	Trig: Free Run	#Avg Type: RMS	TRACE 1 2 3 4 5 TYPE A WARAAM DET A N N N N	Frequency		
F 10 dB/div F	tef Offset 1 dB tef 21.00 dB	in Gain: Low	WAREN, OU WE	Mkr1 5.574 125 GHz -17.05 dBm				
11.0			-			Center Fred 5.58000000 GHz		
-9.00		<u></u>	-			Start Fred 5.567500000 GHz		
-19.0	1					Stop Free 5.592500000 GH7		
-39.0	and the second second				In a series of the series of t	CF Step 2.500000 MH: Auto Mar		
-59.0						Freq Offse 0 H:		
Center 5.58	000 GHz 0 MHz	#VBW	3.0 MHz	Sweep	Span 25.00 MH 1.000 ms (1001 pts	z		
Center 5.58 #Res BW 1.	000 GHz 0 MHz	#VBW	3.0 MHz	Sweep '	Span 25.00 MH 1.000 ms (1001 pts	z )		

#### Channel 116: (Chain A)

## Channel 140: (Chain A)







### Channel 52: (Chain B)

## Channel 60: (Chain B)







## Channel 64: (Chain B)

## Channel 100: (Chain B)





	04:14:07 PM Aug 21, 2015	ALIGNAUTO	. 1	SENSEIINT	1	AC	RF 50 Q	RL
Frequency	TRACE 1 2 3 4 5 6 TYPE A WARAWAY	e: RMS	#Avg Ty	Trig: Free Run	Hz PNO: Fast 😱	0000 GH	eq 5.580000	Center Fi
Auto Tune	5.582 950 GHz -18.04 dBm	-Gain:Low	Ref Offset 1 dB 10 dB/div Ref 21.00 dBm					
Center Freq 5.580000000 GHz			-					-og 11.0
Start Freq 5.567500000 GHz				_				9.00
Stop Freq 5.592500000 GHz	X		•	~			1	19.0
CF Step 2.500000 MHz Auto Mar	and a second and a second and a second and a second a s						-	39.0
Freq Offset 0 Hz								59.0
	Span 25.00 MHz	Sween 1			#VBW:		8000 GHz	69.0 Center 5.5
-	the first first head	STATUS						sq

#### Channel 116: (Chain B)

## Channel 140: (Chain B)





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Product	:	802.11 ac PCIe Module
Test Item	:	Peak Power Spectral Density
Test Site	:	No.3 OATS
Test Mode	:	Mode 20: Transmit (802.11n-20BW 14.4Mbps)(Panel Antenna)

Channel Number	Frequency (MHz)	Chain	PPSD/MHz (dBm)	Total PPSD/MHz (dBm)	Required Limit (dBm)	Result
50	52(0	А	-19.660	-16.650	-13	Pass
52	5260	В	-20.301	-17.291	-13	Pass
60	5300	А	-19.326	-16.316	-13	Pass
		В	-19.906	-16.896	-13	Pass
C 4	5320	А	-20.022	-17.012	-13	Pass
64		В	-21.203	-18.193	-13	Pass
100	5500	А	-16.669	-13.659	-13	Pass
100	5500	В	-19.319	-16.309	-13	Pass
11.6	5500	А	-16.376	-13.366	-13	Pass
116	5580	В	-17.033	-14.023	-13	Pass
140	5700	А	-19.421	-16.411	-13	Pass
140	5700	В	-17.341	-14.331	-13	Pass

## 5250~5350MHz, 5470-5600 MHz and 5650-5725 MHz

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

2. Total PPSD Value = PPSD/MHz value +  $10*\log 2$  (two antennas).



Agilent Spectrum Analyzer - Swept SA					
RL RF 50 Q AC	0 GHz	SENSE:INT	ALIGNAUTO #Avg Type: RMS	07:23:57 PM Sep 25, 2015 TRACE 1 2 3 4 5 6	Frequency
Ref Offset 1 dB 10 dB/div <b>Ref 1.00 dBm</b>	Trig: Free Run #Atten: 10 dB	Mki	DET A NN NN N 1 5.266 900 GHz -19.66 dBm	Auto Tune	
9.00				1	Center Fred 5.260000000 GH:
29.0					Start Free 5.247500000 GH
39.0				the second	Stop Free 5.272500000 GH
59.0					CF Ste 2.500000 MH <u>Auto</u> Ma
79.0					Freq Offse 0 H
89.0 Center 5.26000 GHz				Span 25.00 MHz	
FRES DW 1.0 MHZ	#VBW	3.U IVIMZ	Sweep	1.000 ms (1001 pts)	

### Channel 52: (Chain A)

## Channel 60: (Chain A)





Agilent Spectrum Analyzer - Swept SA							
RL     RP     50 Ω     AC       Center Freq 5.320000000 GHz     Image: Content freq freq freq freq freq freq freq freq		SENSE:INT	ALI #Avg Type: F	GNAUTO RMS	07:29:17 Pf TRAC TY	4 Sep 25, 2015 E 1 2 3 4 5 6 E A WWWWW	Frequency
Ref Offset 1 dB 10 dB/div Ref 1.00 dBm	IFGain:Low	#Atten: 10 dB		<sup>Det A N</sup> Mkr1 5.326 350 ( -20.02 c		50 GHz 02 dBm	Auto Tune
9.00							Center Fred 5.320000000 GH;
29.0			-	<b>♦</b> <sup>1</sup>	1		Start Free 5.307500000 GH:
39.0					X	1 million	Stop Free 5.332500000 GH
59.0							CF Stej 2.500000 MH <u>Auto</u> Ma
79.0							Freq Offse 0 H
89.0 Center 5.32000 GHz	#\/P\M	3 0 MHz		waan 1	Span 2	5.00 MHz	
ASG	#*0**	J.V 1411 12	34	STATUS	000 1115 (	iooi pisj	

## Channel 64: (Chain A)

# Channel 100: (Chain A)

Agilent Spec	etrum Analyzer - Swe	pt SA						
Center	RF 50 Ω Freq 5.50000	AC 0000 GHz	SEN Trig: Free	Run	#Avg Type: RM	UTO 05:30 S	04 PM Aug 21, 2015 TRACE 1 2 3 4 5 6 TYPE A WAXAWAY	Frequency Auto Tune
10 dB/div	Ref Offset 1 d Ref 21.00 d	IFGain:I IB IBm	ow #Atten: 30	dB	N	lkr1 5.49 -'	3 975 GHz 16.67 dBm	
11.0							_	Center Freq 5.50000000 GHz
1.00		<b>A</b> 1						Start Freq 5.487500000 GHz
-19.0	1							Stop Freq 5.512500000 GHz
-39.0							and the second	CF Step 2.500000 MHz Auto Man
-59.0								Freq Offset 0 Hz
-69.0								
Center ( #Res BV	5.50000 GHz V 1.0 MHz		VBW 3.0 MHz		Swe	Spa ep 1.000 n	n 25.00 MHz ns (1001 pts)	
MSG						STATUS		



RL RF 50Ω AC		SENSE:INT	ALIGNAUTO	05:32:05 PM Aug 21, 201	5
enter Freq 5.580000000	Trig: Free Run #Atten: 30 dB		TRACE 1 2 3 4 5 TYPE A WANNA DET A N N N N	6 Frequency	
Ref Offset 1 dB dB/div Ref 21.00 dBm			z Auto Tune n		
1.0			· · · ·		Center Fred 5.580000000 GH;
.00	-				Start Free 5.567500000 GH:
9.0				1	Stop Fred 5.592500000 GH;
9.0				1 miles	CF Step 2.500000 MH: Auto Mar
9.0					Freq Offse
enter 5.58000 GHz	#VBM	3.0 MHz	Sween	Span 25.00 MH	lz

# Channel 116: (Chain A)

Channel 140: (Chain A)

RL	RF 50 Ω	AC		SENSE:INT	ALIGN	AUTO 05:34:40	PM Aug 21, 2015		
enter F	req 5.70000	00000 GHz	Z D:Fast 😱	#Avg Type: RI Trig: Free Run		IS TR	ACE 1 2 3 4 5 6	Frequency	
-		IFGa	ain:Low	#Atten: 30 dB		and the second	DELIA NINININI	Auto Trun	
0 dB/div	Ref Offset 1 o Ref 21.00 o	dB d <b>B</b> m			Mkr1 5.693 650 GHz -19.42 dBm				
og									
11.0								Center Fred	
								5.70000000 GH	
1.00									
1,00							111 12 1	Start Free	
00.6								5.687500000 GH:	
9.0		•	_						
	1					the second se		5 712500000 CH	
	1					1		5.7 12500000 GH	
	£							11	
9,0	1						1	CF Step	
and the second							my have	Auto Mar	
9.0		* *	-				-		
	1							From Office	
59.0							-	OH	
59.0									
						-			
enter 5.	70000 GHz			Same -		Span	25.00 MHz		
Res BW	1.0 MHz		#VBW	3.0 MHz	Swe	ep 1.000 ms	; (1001 pts)		
G						STATUS	A		



RL	RF 50 Ω	AC		SENSE:IN	ř I	1 1	ALIGNAUTO	07:36:02 Pf	M Sep 25, 2015	
Center F	req 5.26000	0000 GH	Z 0: Fast 🔊	Trig: Free Run		#Avg Type	RMS	TRAC TY	CE 1 2 3 4 5 6 PE A WANNAW	Frequency
IFGain:Low Ref Offset 1 dB 10 dB/div Ref 1.00 dBm - 9g				#Atten: 10 dB		DET ANNNN Mkr1 5.253 250 GHz -20.30 dBm		250 GHz 30 dBm	Auto Tune	
9.00						_				Center Fred 5.260000000 GH;
9.0	1	<b>∮</b> <sup>1</sup>					-	X		Start Free 5.247500000 GH
3.0 9 n <b></b>	marker								the states	Stop Free 5.272500000 GH
9.0										CF Ste 2.500000 MH Auto Ma
9.0										Freq Offse 0 H
39.0	26000 GHz							Snap 7	5 00 MH2	
Res BW	1.0 MHz		#VBW	3.0 MHz		\$	Sweep 1	.000 ms (	(1001 pts)	
SG							STATUS			

## Channel 52: (Chain B)

## Channel 60: (Chain B)





Agilent Spectrum Analyzer - S	Swept SA.				
RL RF 50 Center Freq 5 320		SENSE:INT	ALIGNAUTO #Avg Type: RMS	07:37:43 PM Sep 25, 2015 TRACE 1 2 3 4 5 6	Frequency
Ref Offset 10 dB/div Ref 1.00	PNO: Fast IFGain:Low	Trig: Free Run #Atten: 10 dB	Mkr1	TYPE & WWWWW DET A NNNN 1 5.321 375 GHz -21.20 dBm	Auto Tune
-9.00	-		4		Center Freq 5.320000000 GHz
-19,0		, 1 ,		1	Start Free 5.307500000 GHz
-39.0				hay	Stop Fred 5.332500000 GHz
69.0					CF Step 2.500000 MH: Auto Mar
-79.0					Freq Offse 0 Ha
-89.0				2000	
Center 5.32000 GHz #Res BW 1.0 MHz	#VBW	3.0 MHz	Sweep '	Span 25.00 MHz 1.000 ms (1001 pts)	
MSG			STATU	s	.(L.

#### Channel 64: (Chain B)

# Channel 100: (Chain B)

Agilent Spec	trum Analyzer - Swe	pt SA				
Center	Freq 5.50000	0000 GHz PNO: East	Trig: Free Run	#Avg Type: RMS	TRACE 1 2 3 4 5 6 TYPE A WWWAWW	Frequency
10 dB/div	Ref Offset 1 d Ref 21.00 d	IFGain:Lov B Bm	w #Atten: 30 dB	Mkr1	5.494 100 GHz -19.32 dBm	Auto Tune
11.0						Center Freq 5.50000000 GHz
1,00 -9.00						Start Freq 5.487500000 GHz
-19.0	1	<u></u>				Stop Freq 5.512500000 GHz
-39,0					and the second	CF Step 2.500000 MHz <u>Auto</u> Man
-59.0						Freq Offset 0 Hz
-69.0					2 10 11-1	
Center 5 #Res BV	.50000 GHz 1.0 MHz	#\	/BW 3.0 MHz	Sweep 1	Span 25.00 MHz 1.000 ms (1001 pts)	
MSG				STATU	s	<u></u>



								ept SA	m Analyzer - Swe	ent Spectr
Frequency	PM Aug 21, 2015 ACE 1 2 3 4 5 6	04:44:24 Pf TRA	ALIGNAUTO	#Avg 1	SENSE:INT		z	AC 00000 GI	RF 50 Ω eq 5.58000	RL enter Fr
a. (a. 1 da 1 da 1 da	DET A NNNNN	TY			ree Run : 30 dB	Trig: F #Atter	'NO: Fast Ģ Gain:Low	F		
Auto Tune	550 GHz .03 dBm	1 5.582 5 -17.	Mkr1				12	iB IBm	Ref Offset 1 d Ref 21.00 d	dB/div
Center Frec	1									g
5.580000000 GHz		1			-					.0
					1					
Start Fred	11.0								i li i i	
5.567566666 6112				1					-	
Stop Fred		-					in a second second	ر. منج <del>ر ما دار ا</del>	-	.0
5.592500000 GHz		1				_			1	.0
CE Stor		1					1		1	
2.500000 MHz Auto Mar	and the second			1				1	- C	.0
		-	-	-		÷.		*		.0
Freq Offset									-	.a
0 Hz										
	le le c								a 1994 a	.0
	25.00 MHz	Span 2	and a						8000 GHz	enter 5.5
	(1001 pts)	1.000 ms (	Sweep 1		Hz	V 3.0 M	#VBV	×	.0 MHz	es BW
	(1001 pts)	1.000 ms ( 15	Sweep 1		HZ	V 3.U IVI	#VBV		I.U IVIHZ	BW

## Channel 116: (Chain B)

# Channel 140: (Chain B)

RL	RF 50 Ω	AC	SENSEUNT	ALIGNAUTO	04:47:24 PM Aug 21, 201	5 Eraguanav
Center F	req 5.7000	DOOOO GHz PNO: Fast	Trig: Free Run	#Avg Type: RMS	TRACE 1 2 3 4 5 TYPE A WANAA	6 Frequency
-		IFGain:Lov	/ #Atten: 30 dB		DETIANINN	
10 dB/div	Ref Offset 1 Ref 21.00	dB d <b>B</b> m		IVIK	1 5.694 925 GH -17.34 dBr	n
						Center Freq
11.0						5.70000000 GHz
1.00						
0.00					a	Start Freq 5.687500000 GHz
-9.00		1				
-19.0	-		and the second s		-	Stop Freq
-29.0	1					5.712500000 GHz
	1					CE Stor
-39,0	and a start of the				and the second	2.500000 MHz Auto Man
49.0						Erog Offen
-59.0						0 Hz
-69.0			_			
				4		
Center 5. #Res BW	1.0 MHz	#V	BW 3.0 MHz	Sweep	Span 25.00 MH 1.000 ms (1001 pts	5)
MSG				STAT	us	



Product	:	802.11 ac PCIe Module
Test Item	:	Peak Power Spectral Density
Test Site	:	No.3 OATS
Test Mode	:	Mode 21: Transmit (802.11n-40BW 30Mbps)(Panel Antenna)

Channel Number	Frequency (MHz)	Chain	PPSD/MHz (dBm)	Total PPSD/MHz (dBm)	Required Limit (dBm)	Result
5.4	5270	А	-19.080	-16.070	-13	Pass
54	5270	В	-19.911	-16.901	-13	Pass
(2)	5210	А	-19.490	-16.480	-13	Pass
62	5310	В	-20.270	-17.260	-13	Pass
102	5510	А	-17.910	-14.900	-13	Pass
102	5510	В	-22.820	-19.810	-13	Pass
110	5550	А	-17.950	-14.940	-13	Pass
110	5550	В	-22.680	-19.670	-13	Pass
124	5 (70)	А	-18.560	-15.550	-13	Pass
134	5670	В	-18.730	-15.720	-13	Pass

## 5250~5350MHz, 5470-5600 MHz and 5650-5725 MHz

Note: 1.The quantity 10\*log 2 (two antennas) is added to the spectrum peak value according to document 662911 D01. 2.Total PPSD Value = PPSD/MHz value + 10\*log 2 (two antennas).



BI BE 50.0 ar		SENSE/INT	ALIGNALITO	07:30:11 PM Sep 25, 2015	
Center Freq 5.27000000	er Freq 5.270000000 GHz PN0: East Trig: Free Run #Avg Type: RMS TRACE [1:2:3:4:5:6 Type] A WAWAWA				
Ref Offset 1 dB 10 dB/div Ref 1.00 dBm	IFGain:Low	#Atten: 10 dB	Mkr	1 5.279 45 GHz -19.08 dBm	Auto Tune
9.00					Center Freq 5.270000000 GHz
19.0					
29.0					Start Freq 5.245000000 GHz
49.0					Stop Fred 5.295000000 GH;
59.0					CF Step 5.000000 MH Auto Mar
79.0					Freq Offse 0 Ha
89.0					
Center 5.27000 GHz #Res BW 1 0 MHz	#VB\A(	3.0 MHz	Sween 1	Span 50.00 MHz	
ISG			etatile	ine (ine fiel)	

#### Channel 54: (Chain A)

## Channel 62: (Chain A)





		12 100				ectrum Analyzer - Swept SA	Keysight S				
Frequency	PM Aug 27, 2015 ACE 1 2 3 4 5 6	RF     50 Ω     AC     SENSE:INT     ALIGN AUTO     09:44:31 PM Aug 27, 20:       reg 5     510000000 GHz     #Avg Type: RMS     TRACE 1 2 3 4 5					Center				
T- 34 Gu	PNO: Fast C Trig: Free Run TYPE A WWWWW IFGain:Low #Atten: 30 dB DET A NNNN					Contor I					
Auto Tune	1 95 GHz .91 dBm	r1 5.521 -17.	Mkr	ê		Ref Offset 1 dB 10 dB/div Ref 21.00 dBm					
Center Fred 5.510000000 GH							11.0				
Start Fred 5.485000000 GH:							1.00 -9.00				
Stop Fred 5.535000000 GH;			<b>*</b>	~~~			-19.0				
CF Step 5.000000 MH Auto Mar	-						39.0				
Freq Offse 0 H;							-49.0				
							-69.0				
	50.00 MHZ (1001 pts)	Span : 1.000 ms	Sweep 1	3.0 MHz	#VBW	1.0 MHz	#Res BM				
		s	To STATUS				MSG				

## Channel 102: (Chain A)

## Channel 110: (Chain A)





- ÷		,				ept SA	ctrum Analyzer - Sw	Keysight Spe	
Frequency	PM Aug 27, 2015	09:51:28 P TRA	ALIGN AUTO #Avg Type: RMS	SENSE:INT	łz	AC 00000 GH	RF 50 Ω eq 5.67000	enter Fi	
Auto True	DETANNNN	D		#Atten: 30 dB	NO: Fast 🔾 Gain:Low	PI IFC			
AutoTun	6 75 GHz 3.56 dBm	1 5.656 -18.	Ref Offset 1 dB     Mkr1       10 dB/div     Ref 21.00 dBm						
Center Free								.og	
5.670000000 GH								11.0	
Start Free							-	1.00	
5.645000000 GH								9.00	
Stop Ere	1.			- the second		<b>♦</b> <sup>1</sup>		19.0	
5.695000000 GH				Y				29 በ	
CF Ster									
5.000000 MH <u>Auto</u> Ma	- and the second							40.0	
Freq Offse								49.0	
он								59.U	
	1.000			-				69.0	
	50.00 MHz	Span 5	Sween 1		#\/D\\		7000 GHz	enter 5.6	
-	(1001 hrs)	.000 ms	Sweep 1		#VDW	_		SG SG	

## Channel 134: (Chain A)



RL RF 50 Ω AC Center Frea 5.270000000 GHz	SENSE:INT	ALIGNAUTO #Avg Type: RMS	07:38:26 PM Sep 25, 2015 TRACE 1 2 3 4 5 6	Frequency	
PNO IFGa Ref Offset 1 dB 0 dB/div Ref 1.00 dBm	: Fast 🖵 Trig: Free Run in:Low #Atten: 10 dB	Mkr	1 5.278 75 GHz -19.91 dBm	Auto Tune	
9.00				Center Fred 5.270000000 GH:	
29.0			7	Start Free 5.245000000 GH:	
39.0			1 miles	Stop Free 5.295000000 GH	
39.0				CF Ste 5.000000 MH <u>Auto</u> Ma	
79.0				Freq Offse 0 H	
390 Senter 5.27000 GHz Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep 1	Span 50.00 MHz .000 ms (1001 pts)		
Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep 1	Span 50.00 MHz .000 ms (1001 pts)		

# Channel 54: (Chain B)

# Channel 62: (Chain B)

Agilent Spectrum Analyzer - Swept SA				
ON RL RF 50Ω AC	SENSE:INT	ALIGNAUTO #Avg Type: RMS	07:39:04 PM Sep 25, 2015 TRACE 1 2 3 4 5 6	Frequency
F IF 10 dB/div Ref 1.00 dBm	NO: Fast 🌩 Trig: Free Run Gain:Low #Atten: 10 dB	Mkr	1 5.321 40 GHz -20.27 dBm	Auto Tune
-9.00				Center Freq 5.310000000 GHz
-19.0			7	Start Freq 5.28500000 GHz
-39.0				Stop Freq 5.335000000 GHz
-59.0				CF Step 5.000000 MHz <u>Auto</u> Man
-79.0				Freq Offset 0 Hz
Center 5.31000 GHz #Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep 1	Span 50.00 MHz 000 ms (1001 pts)	





#### Channel 102: (Chain B)

## Channel 110: (Chain B)





		AL ARCENT	-					ept SA	um Analyzer - Sw	eysight Spectr	
Frequency	MAug 27, 2015 E 1 2 3 4 5 6 E A WWWWW	09:29:54 P TRAC TYP	ALIGN AUTO	#	ee Run	Trig: Fre	Z NO: Fast	0000 GH	RF 50 Ω q 5.67000	nter Fre	
Auto Tune	IFGain:Low     #Atten: 30 dB     DET [A NNNNN       Ref Offset 1 dB     Mkr1 5.682 75 GHz     -18.73 dBm       Page 21 00 dBm     -18.73 dBm     -18.73 dBm						IFGain:Low Ref Offset 1 dB 10 dB/div Ref 21.00 dBm				
Center Free 5.670000000 GH:				_							
Start Free 5.645000000 GH:										1	
Stop Free 5.695000000 GH:		7	• • ·			~			T	1	
CF Step 5.000000 MH Auto Mar	- and -	1									
Freq Offse 0 H:										1	
	0.00 MHz	Span 5	Sween 1			30 MH:	#\/B\M		000 GHz	nter 5.67	
	1001 proj	vvv mə (	STATUS		-	0.0 10112	#*0**		v 1811 12		

## Channel 134: (Chain B)



Product	:	802.11 ac PCIe Module
Test Item	:	Peak Power Spectral Density
Test Site	:	No.3 OATS
Test Mode	:	Mode 22: Transmit (802.11ac-20BW-14.4Mbps)(Panel Antenna)

Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm)	Required Limit (dBm)	Result
1.4.4	5720(Band3)	А	-18.740		-15.730	-13	Pass
144		В	-16.730		-13.720	-13	Pass
144	5720(D 14)	А	-28.080	6.980	-18.090	30	Pass
	5/20(Band4)	В	-26.180	6.980	-16.190	30	Pass

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

2.Total PPSD Value = PPSD/MHz value +  $10*\log 2$  (two antennas) + BWCF.



### Channel 144: (Chain A)

				ept SA	er - Swe	alyzer	m Anal	etrun	t Spec	ilen
ALIGNAUTO 05:15:24 PM Aug 21, 2015	SENSE:INT			AC	50 Ω		RF			RL
#Avg Type: RMS TRACE 1 2 3 4 5 6 TYPE A WARNAWY DET A N N N N	# Free Run n: 30 dB		GHz PNO: Fast 😱 IFGain:Low	00000	2000	5.72	eq 5	Fre	ter	en
Mkr2 5.724 650 GHz -18.74 dBm				dB dBm	set 1 d 1.00 d	Offse 21.0	Ref (		3/div	0 dE
										og 11.0 1.00
€21					5	1	/			9.00 19.0 29.0 19.0
										19.0 59.0 59.0
Span 25.00 MHz Sweep  1.000 ms (1001 pts)	Hz	1 3.0	#VBW		SHz z	0 GH /IHz	2000 1.0 M	5.72 W 1	ter : s BV	en Re
FUNCTION CO FUNCTION WIDTH FUNCTION VALUE	2 dBm	-1	000 GHz	5.725 (			SOU f	TRC 1	MODE	KB 1
	4 dBm	-1	650 GHz	5.724 (			f	1	N	23456
										0 7 8 9 0
STATUS	1						s 1			G

# Channel 144: (Chain A)

Agilent Sp	ectrum	Analyzer - !	Swept SA							
Center	r Free	RF 50 5.720	1Ω AC 000000 GH PI	lz NO: Fast (S	SENSE:	INT AVG	ALIGNAUTO Type: RMS	05:15:42P TRA TY	M Aug 21, 2015 CE 1 2 3 4 5 6 PE A WWWWW	Frequency
10 dB/d	F iv F	tef Offset Ref 21.0	1 dB 0 dBm	Gain:Low	#Atten: 30 dE	3	Mkr2	5.726 5 -28.	550 GHz 08 dBm	Auto Tune
11.00										Center Fred 5.720000000 GHz
-19.0			مونونيونيونيونيونيونيو مونونيونيونيونيونيونيونيونيونيونيونيونيون	್ರಿವಿ ಕುಲ್ಕೆ ಕಾಡಿತ್ಕಾರ ಕೆ.	<u>araquaa a</u> a	مەرەبەرەرەرەرەرەرەرەرەرەرەرەرەرەرەرەرەرە	1 •2	appen		Start Fred 5.707500000 GH2
-49.0 -59.0	man	and.						- Ver	Manne	Stop Fred 5.732500000 GHz
Center #Res E	5.72 SW 10	000 GHz 00 kHz		#VBW	300 kHz		Sweep (	Span 2 3.133 ms (	25.00 MHz (1001 pts)	CF Step 2.500000 MH: Auto Mar
MKR MOD 1 N 2 N 3 4 5 6 7 8 9		501	× 5.725 000 5.726 550	0 GHz 0 GHz	-28.34 dBm -28.08 dBm	FUNCTION	FUNCTION WIDTH			Freq Offsel 0 Hz
10 11 <							CTAT	e	<u>.</u>	



Agilent Spo	ectrum	1 Analyza	er - Swep	n SA								
Center	Fre	RF q 5.7	50 Ω 20000	AC 0000 G	Hz PNO: Fact (	SEI	Run	#Avg Ty	ALIGNAUTO pe: RMS	04:18:40 PM TRAC TYI	4 Aug 21, 2015 E 1 2 3 4 5 6 PE A WWWWW	Frequency
10 dB/di	IFGain:Low Ref Offset 1 dB 0 dB/div Ref 21.00 dBm 99						0 dB		Mkr2	¤ 2 5.715 0 -16.	50 GHz 73 dBm	Auto Tune
11.0 1.00					2				1			Center Fred 5.720000000 GHz
-19.00									<u></u>	1		Start Free 5.707500000 GH2
-49.0 -59.0 -69.0	E											Stop Fred 5.732500000 GHz
Center #Res B	5.72 W 1	2000 G .0 MH	9Hz z		#VB	W 3.0 MHz	P		Sweep '	Span 2 1.000 ms (	5.00 MHz 1001 pts)	CF Step 2.500000 MH
Mill     Model       1     N       2     N       3     -       4     -       5     -       6     -       7     -       8     -       9     -       10     -				5.725 0 5.715 0	00 GHz 50 GHz	-17.60 dł -16.73 dł	3m 3m		INCTION WIDTH			Freq Offsel 0 Hz
K ASG	a d								STATU	IS	2	

# Channel 144: (Chain B)

# Channel 144: (Chain B)

enter	Fre	RF a 5.7	50 Ω 2000	AC	GHz		SE	NSE:INT	#Avg	ALIGNAUTO	04:18:59 TR	PM Aug 21, 2015 ACE 1 2 3 4 5 6	Frequency
					PNO: Fa	st 🕞	Trig: Free Run #Atten: 30 dB			1. A 19 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		DET A NNNNN	a searce
0 dB/di	v I	Ref Off	set 1 d 1.00 d	B Bm						Mkr	2 5.725 -26	325 GHz .18 dBm	Auto Tun
og 11.01													Center Fre 5.720000000 GH
9.00			0000	man	sanna	مممم	panadang	popolo	مممممم	2	alanay		Start Fre 5.707500000 GH
9.0	~~~~	and a						1			5	Mannon	<b>Stop Fre</b> 5.732500000 GH
enter Res B	5.72 W 10	000 C	SHz Z		#	VBW	300 kHz			Sweep	Span 3.133 ms	25.00 MHz (1001 pts)	CF Ste 2.500000 MI
KR MODE		SCL f		× 5.725	000 GH;	z	Y -26.50 dl	3m	UNCTION	FUNCTION WIDT	'H FUNC	TION VALUE	Auto Mi
2 N 3 4 5	1	f		5.725	325 GH:	z	-26.18 dl	3m					Freq Offs 0 F
7 8 9													
1	1 1					-			_			2	



Product	:	802.11 ac PCIe Module
Test Item	:	Peak Power Spectral Density
Test Site	:	No.3 OATS
Test Mode	:	Mode 23: Transmit (802.11ac-40BW-30Mbps)(Panel Antenna)

Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm)	Required Limit (dBm)	Result
140	5710/D 12)	А	-19.430		-16.420	-13	Pass
142	5710(Band3)	В	-17.150		-14.140	-13	Pass
1.40	5710/D 14)	А	-29.030	6.980	-19.040	30	Pass
142	5710(Band4)	В	-27.630	6.980	-17.640	30	Pass

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

2.Total PPSD Value = PPSD/MHz value +  $10*\log 2$  (two antennas) + BWCF.



						Swept SA	n Analyzer - S	ipectrun	Igilent
Frequency	05:17:34 PM Aug 21, 2015	ALIGNAUTO	#Aua	SENSE:INT		DΩ AC	RF 50		RL
	TYPE A WAXAWAY DET A N N N N N	Type. RMS	#CV2	Trig: Free Run #Atten: 30 dB	PNO: Fast 🕞		g 5.710	er Fre	Jent
Auto Tune	5.696 95 GHz -19.43 dBm	Mkr				t1 dB 10 dBm	Ref Offset ' Ref 21.00	div	10 dB
Center Fred 5.710000000 GHz									Log 11.0 1.00
Start Free 5.685000000 GHz	1			~		¢ <sup>2</sup>	F		-19.0 -29.0 -39.0
Stop Free 5.735000000 GH									-49.0 -59.0 -69.0
CF Stej 5.000000 MH	Span 50.00 MHz 00 ms (1001 pts)	Sweep 1.		3.0 MHz	#VBW	z	1000 GHz .0 MHz	er 5.71 BW 1	L Cent #Res
Auto Mar	FUNCTION VALUE	FUNCTION WIDTH	FUNCTION	-20.79 dBm	5 00 GHz	× 5.72	f	IDE TIRC	MKR M
Freq Offse 0 Hi				-19.43 dBm	6 95 GHz	5.69	f	1 1	2 3 4 5
									6 7 8 9
									10 11
		STATUS							ASG

## Channel 142: (Chain A)

## Channel 142: (Chain A)

Agilent Spect	rum Analyzer	- Swept SA				-				<del></del>
Center F	req 5.71	0000000 GH	Z	SENS	Run	#Avg Typ	#Avg Type: RMS TRAC TYP		PM Aug 21, 2015 ACE 1 2 3 4 5 6 TYPE A WWWWW	Frequency
10 dB/div	Ref Offs Ref 21.	et 1 dB .00 dBm	ain:Low	#Atten: 30 (	dB		Mk	r2 5.72( -29	5 00 GHz .03 dBm	Auto Tune
11.0 1.00										Center Free 5.710000000 GH;
-19.0 -29.0 -39.0	100	10,64,100,066,640,04,650,000,64	uccourrelloosessec	CODAAADDAAAAADU	0000000	งงา <b>น</b> เงาะคางงานๆจะ1	un alaran ana ana ana ana ana ana ana ana ana	2		Start Free 5.685000000 GH:
-49.0 -59.0 -69.0	NAMINA PARTY OF								and the manufactures of	Stop Free 5.735000000 GH
Center 5 #Res BW	.71000 GI 100 kHz	Hz	#VBV	V 300 kHz			Sweep	Span 6.200 ms	50.00 MHz (1001 pts)	CF Step 5.000000 MH Auto Ma
1 N 2 N 3 4 5	1 f 1 f	× 5.725 00 5.725 00	) GHz ) GHz	-29.03 dBr -29.03 dBr	n n		NCHUNWIDTH			Freq Offse 0 H
0 7 8 9 10 11									~	
MSG							STATU	JS	2	-



Channel 142	<b>2:</b> (Chain B)
-------------	---------------------

- Burner al barner	um Analyzer	- Swept SA						
Center F	req 5.71	50 92 AC	Trig: Fr	ee Run	ALIGNA #Avg Type: RMS	UTO 04:21:20/ TR/ T	M Aug 21, 2015 ACE 1 2 3 4 5 6 YPE A WWWWW	Frequency
10 dB/div	Ref Offse Ref 21.	et 1 dB 00 dBm	Low #Atten:	30 dB	i	Mkr2 5.699 -17	35 GHz 15 dBm	Auto Tune
11.00								Center Fred 5.710000000 GH;
-9.00 -19.0 -29.0 -39.0	ſ			~				Start Fred 5.685000000 GHz
-49.0 -59.0 -69.0								Stop Free 5.735000000 GH:
Center 5. #Res BW	71000 GH 1.0 MHz	Iz	#VBW 3.0 MH	z	Swee	Span : p 1.000 ms	50.00 MHz (1001 pts)	CF Step 5.000000 MH
MKR MODE T 1 N 2 N 3 4 5 6 7 8 9 10 11		× 5,725 00 G 5,699 35 G	Hz -18.71 Hz -17.15	dBm dBm				Freq Offse 0 H:

# Channel 142: (Chain B)

	trum A	alyzer - Sw	vept SA							
Center	Freq	5.7100	00000 G	Hz PNO: Fast 🖙	Trig: Free Ru	n #Avg	Type: RMS	TRACE 1 2 3 4 5 6 TYPE A WWWW		Frequency
10 dB/div	Re Re	f Offset 1 f 21.00	dB dBm	FGain:Low	#Atten: 30 dB	91 	Mk	r2 5.72	5 00 GHz .63 dBm	Auto Tune
11.0 1.00										Center Free 5.710000000 GH
-9.00 -19.0 -29.0		perposed,	2010/00/10/00/00/00	054036050000000000	40000280000008.	10000000000000000000000000000000000000	າກະບົດຈາຍສາຍແລະ	2		Start Free 5.68500000 GH
-49.0 -59.0	Annapast	and a second						1 L	manninitian	Stop Free 5.735000000 GH
Center ( #Res BV	5.7100 V 100	00 GHz kHz		#VBW	/ 300 kHz		Sweep	Span 6.200 ms	50.00 MHz (1001 pts)	CF Ste 5.000000 MH Auto Ma
MKR MODE 1 N 2 N 3 4 5 6	IBC SD 1 f 1 f		× 5.725 5.725	00 GHz 00 GHz	¥ -27.63 dBm -27.63 dBm	FUNCTION	FUNCTION WIDTH	FUNC	TION VALUE	Freq Offse
7 8 9 10										



Product	:	802.11 ac PCIe Module
Test Item	:	Peak Power Spectral Density
Test Site	:	No.3 OATS
Test Mode	:	Mode 24: Transmit (802.11ac-80BW-65Mbps)(Panel Antenna)

Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm)1	Required Limit (dBm)	Result
<b>5</b> 0	5200	А	-20.944		-17.934	-13	Pass
58	5290	В	-22.616		-19.606	-13	Pass
100	5520	А	-20.241		-17.231	-13	Pass
106	5530	В	-25.557		-22.547	-13	Pass
100	5(10	А	-16.830		-13.820	-13	Pass
122	5610	В	-16.900		-13.890	-13	Pass
120	5690	А	-20.110		-17.100	-13	Pass
138	(Band3)	В	-21.100		-18.090	-13	Pass
120	5690	А	-31.320	6.980	-21.330	30	Pass
138	(Band4)	В	-29.980	6.980	-19.990	30	Pass

## 5250~5350MHz, 5470-5600 MHz and 5650-5725 MHz

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

2.Total PPSD Value = PPSD/MHz value + 10\*log 2 (two antennas)



Agilent Spectrum A	nalyzer - Swept SA		CENCERNIT	ALTCALALITO	07/50/00 0M 0/-524 2015	1
Center Freq	5.29000000	D GHz PNO: Fast 😱 IFGain:Low	Trig: Free Run #Atten: 30 dB	#Avg Type: RMS	TRACE 1 2 3 4 5 6 TYPE A WARMAN DET A N N N N N	Frequency
Re 10 dB/div Re	f Offset 1 dB ef 21.00 dBm			M	kr1 5.284 5 GHz -20.94 dBm	Auto Tune
11.0						Center Fred 5.290000000 GHz
9.00						Start Free 5.240000000 GH:
-19.0			<b>1</b>			Stop Frec 5.340000000 GH;
39,0					Annon manage	CF Step 10.000000 MH Auto Mar
59.0						Freq Offse 0 H:
-69.0 Center 5.2900	00 GHz MHz	#\/B\//	3 0 MH7	Sween	Span 100.0 MHz	
ASG			010 11112	STATU	s	L

## Channel 58: (Chain A)

# Channel 106: (Chain A)

RL	RF 50 Ω /	AC	SENSE:INT	ALIGNAUTO	07:54:39 PM Aug 24, 2015	Erennenti
Center F	req 5.530000	DOO GHz PNO: Fast	Trig: Free Run	#Avg Type: RMS	TRACE 1 2 3 4 5 6 TYPE A WARMAN	Frequency
		IFGain:Low	#Atten: 30 dB		DETIANNNN	Auto Tupe
10 dB/div	Ref Offset 1 dB Ref 21.00 dB	m	1. J. L.	M	kr1 5.513 7 GHz -20.24 dBm	
						Center Fred
11.0						5.530000000 GHz
1.00						
-9.00					·	Start Freq 5.480000000 GHz
-19.0		<b>1</b>		1		
-29.0						5.580000000 GHz
						CE Sten
-49.0					man	10.000000 MHz Auto Man
-59.0						Freq Offset
-69.0						
					2 mm   ] ( %) (	
Center 5. #Res BW	53000 GHz 1.0 MHz	#VBW	3.0 MHz	Sweep	Span 100.0 MHz 1.000 ms (1001 pts)	
ISG	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	- 77.27 M		STATI	is in the second s	



	05:22:30 PM Aug 21, 2015	ALIGN AUTO	SENSE:INT	C	RF 50 Q AC	RL
Frequency	TRACE 1 2 3 4 5 6 TYPE A WAAAWAA DET A N N N N N	Avg Type: RMS	Trig: Free Run	PNO: Fast	req 5.61000000	Center F
Auto Tune	r1 5.577 5 GHz -16.83 dBm	Mk	MACH. OF AL	n	Ref Offset 1 dB Ref 21.00 dBm	0 dB/div
Center Fred 5.610000000 GH;					+	- <b>og</b> 11.0
Start Fred 5.560000000 GH:	-					9.00
Stop Free 5.66000000 GH	-	With the second s				19.0
CF Step 10.000000 MH: Auto Mar	When we want and				new man	39.0
Freq Offse 0 Ha						59.0
	Span 100.0 MHz	Sween 1	3 0 MHz	#VB\\\\	51000 GHz	69.0 Center 5.0
	000 ms (1001 pts)	oweep I.	3.0 IVINZ	#VDVV.	1.0 141612	RES DVV

## Channel 122: (Chain A)

## Channel 138 (Band3): (Chain A)

Agilent Spec	trum Analyze	r - Swept SA							ř.
Center	Freq 5.69	50Ω AC 900000000 G	Hz	SENSE:	MT #Avg	g Type: RMS	08:38:08F TRA T\	M Aug 24, 2015 CE 1 2 3 4 5 6 (PE A WAXAMAY	Frequency
-	_		IFGain:Low	#Atten: 30 dB					Auto Tune
10 dB/div	Ref Offs Ref 21	et 1 dB .00 dBm				IVI	-20.	62 GHZ 11 dBm	
11.0									Center Fred
1.00									5.69000000 GHz
-19.00	- 1						$\Diamond^1$		Otort From
-29.0				Y					5.640000000 GHz
-49.0	- and								
-59.0			1						Stop Freq 5.740000000 GHz
Center 5 #Res BV	5.69000 G V 1.0 MHz	Hz	#VBI	N 3.0 MHz		Sweep '	Span 1 1.000 ms	100.0 MHz (1001 pts)	CF Step 10.000000 MHz
MKR MODE	TRC SCL	×	E D CUa	7 22.55 dBm	FUNCTION	FUNCTION WIDTH	FUNCT	ON VALUE	<u>Auto</u> Mar
2 N 3 4 5	i f	5.67	6 2 GHz	-22.95 dBm -20.11 dBm					Freq Offset 0 Hz
6 7 8 9									
10								5	
MSG						STATU	s		



N D1	eenun	DE.	E FOLO	ac l		CTN.	(CEC) IN [TT]	1	ALTCALALITO	00,00,070	M Mus 24 2015	
Center	Fre	q 5.6	90000	0000 G	Hz PNO: Fast G	Trig: Free	Run	#Avg Tyj	e: RMS	TRA TY	CE 1 2 3 4 5 6 PE A WWWWWW	Frequency
10 dB(d)	iv	Ref Of	fset 1 di 1 00 di	3 Bm	FGain:Low	#Atten: 30	dB		Mk	r2 5.72 -31.	5 0 GHz 32 dBm	Auto Tune
11.0	19		1.00 0									Center Fred 5.69000000 GH
19.0 29.0 39.0		- Mary	The space of the s	an a	ningu ngalakan mulan ing	True and a state of the state o	Million Conferences	มั <mark>ตรุมเจ<sub>าส</sub>ามหุนสมให้ต</mark> า	ลูป <sub>กลุงสุดถูกประชาชาติไ</sub>	2		Start Free 5.64000000 GH
49.0 59.0 69.0	North Cases of	and a									and a second second second	Stop Fre 5.740000000 GH
Center Res E	5.69 SW 1	0000 ( 00 kH	GHz z		#VBV	V 300 KHz			Sweep 1	Span 1 2.40 ms (	00.0 MHz (1001 pts)	CF Step 10.000000 MH
1 N 2 N 3 4 5 6 7		SCL f		* 5.72 5.72	5 0 GHz 5 0 GHz	-31.32 dE -31.32 dE	3m 3m		INCTION WIDTH	FUNCTI		Freq Offse 0 H
8 9 10 11											2	

## Channel 138 (Band4): (Chain A)

5.340000000 GHz

**CF Step** 10.000000 MHz <u>o</u> Man

Freq Offset

0 Hz

Auto



-29.0

-39.0

-49.0

-59.0

-69.0

Center 5.29000 GHz #Res BW 1.0 MHz

Agilent Spect	rum Analyzer - Swept SA						
Center F	RF 50 Q AC	) GHz	SENSE:INT	#Avg Type	ILIGNAUTO RMS	08:01:30 PM Aug 24, 2015 TRACE 1 2 3 4 5 6	Frequency
10 dB/div	Ref Offset 1 dB Ref 21.00 dBm	PNO: Fast 🖵 IFGain:Low	#Atten: 30 dB		Mk	r1 5.306 9 GHz -22.62 dBm	Auto Tune
11.0							Center Freq 5.290000000 GHz
1,00 -9.00							Start Freq 5.240000000 GHz
-19.0							Stop Freq

# Channel 58: (Chain B)

## Channel 106: (Chain B)

Span 100.0 MHz Sweep 1.000 ms (1001 pts)

STATUS

Agreen spectrum Analyzer - Swept SA		SENSE:INT	ALIGNAUTO	08:03:16 PM Aug 24, 2015	
Center Freq 5.530000000	GHz	Tria: Free Run	#Avg Type: RMS	TRACE 1 2 3 4 5 6	Frequency
	PNO: Fast 🖵	#Atten: 30 dB		DET A NNNNN	
Ref Offset 1 dB 10 dB/div Ref 21.00 dBm			M	kr1 5.516 5 GHz -25.56 dBm	Auto Tune
					Center Fred
11.0					5.530000000 GHz
				for the second	
1.00					Start Freq
-9.00					5.480000000 GHz
-19.0				1	
	↓ <sup>1</sup>				5 58000000 GHz
-29.0		N. C.			
-39.0					CF Step
					10.000000 MHz <u>Auto</u> Man
-49.0				and the second second	1
-59.0		-			Freq Offset 0 Hz
-69.0					
				2.000	
Center 5.53000 GHz		0.0505	1.000	Span 100.0 MHz	
#Res BW 1.0 MHz	#VBW	3.0 MHz	Sweep '	1.000 ms (1001 pts)	

#VBW 3.0 MHz



	04:28:59 PM Aug 21:2015	ALIGNALITO	SENSEINT		RE 50.0 ac	Agilent Spectr
Frequency	TRACE 1 2 3 4 5 6 TYPE A WAWAWAW DET A N N N N N	Avg Type: RMS	Trig: Free Run #Atten: 30 dB	PN0: Fast	eq 5.61000000	Center F
Auto Tune	r1 5.627 6 GHz -16.90 dBm	Mk		II Gailleow	Ref Offset 1 dB Ref 21.00 dBm	10 dB/div
Center Fred 5.610000000 GHz						11.0
Start Free 5.560000000 GH:		<b>▲</b> 1				9.00
Stop Free 5.660000000 GH						19.0
CF Step 10.000000 MH <u>Auto</u> Mar					~	39.0 49.0
Freq Offse 0 H						59.0
	Span 100.0 MHz .000 ms (1001 pts)	Sweep 1	3.0 MHz	#VBW	1000 GHz .0 MHz	Center 5.0 #Res BW
L		STATUS				ISG

## Channel 122: (Chain B)

# Channel 138: (Chain B)

Agilent Spectrum Analyzer - Swept SA				
RE RF 50 Ω AC Center Freq 5.690000000		ALIGNAUTO	08:41:07 PM Aug 24, 2015 TRACE 1 2 3 4 5 6 TYPE A WWWWW	Frequency
	IFGain:Low #Atten: 30 dB		DET A N N N N N	Auto Tune
Ref Offset 1 dB 10 dB/div Ref 21.00 dBm		MI	cr2 5.678 7 GHz -21.10 dBm	
11.0				Center Fred
1.00				5.69000000 GHz
-19.00	¢ <sup>2</sup>		01	5.85A.
-29.0				Start Freq 5.64000000 GHz
-39.0				
-49.0				Stop Free
-69.0				5.740000000 GHz
Center 5.69000 GHz #Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep 1	Span 100.0 MHz .000 ms (1001 pts)	CF Step 10.000000 MHz
MKR MODE TRC SCL	Y	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
1 N 1 f 5.6	25.0 GHz -21.51 dBm 78.7 GHz -21.10 dBm			Eron Offcot
4				0 Hz
6 7				-
8 9				
10 11				
MSG		STATU	5	-



Agilent Spect	rum Analy	zer - Swept	SA					,			
XI RL	RF	50 Ω	AC		SENS	E:INT	- Internet	ALIGNAUTO	08:41:25 F	M Aug 24, 2015	Fraguandy
Center F	ter Freq 5.690000000 GHz PNO: Fast G IFGain:Low				Trig: Free #Atten: 30	Trig: Free Run #Atten: 30 dB		#Avg Type: RMS		CE 1 2 3 4 5 6 PE A WANNAN DET A N N N N N	Frequency
10 dB/div	Ref O	fset 1 dB 1.00 dB	sm		1			Mk	r2 5.72 -29.	5 0 GHz 98 dBm	Auto Tune
11.0 1.00											Center Fred 5.690000000 GH:
-19.0 -29.0 -39.0	1	undertandadaal Par	an an thui an an thui a	ามรู้สุดที่ <sup>สาม</sup> โอก <sup>รั</sup> นสุกรับป	Marina and a strain of the second	ntunyanya kataka	Baadwayyniildigrafiyayahing	au <sup>ne</sup> es <sup>ph</sup> Uhrendujeteerkoj	2 Alfred Harve Notestar		Start Free 5.64000000 GH:
-49.0 -59.0	and the second									And and a state of the state of	Stop Free 5.740000000 GH
Center 5 #Res BW	.69000 / 100 kł	GHz Iz		#VBV	/ 300 kHz			Sweep 1	Span 1 2.40 ms	00.0 MHz (1001 pts)	CF Step 10.000000 MH Auto Mai
MKR MODE			× 5.705	0 CHal	20 00 dB	FU	NCTION FL	INCTION WIDTH	FUNCT	ON VALUE	<u>Auto</u> mai
1 N 2 N 3 4 5	1 f		5.725	0 GHz	-29.98 dB -29.98 dB	m					Freq Offse 0 Ha
6 7 8 9 10 11											
MSG								STATUS	5	3	

## Channel 138: (Chain B)



Product	:	802.11 ac PCIe Module
Test Item	:	Peak Power Spectral Density
Test Site	:	No.3 OATS
Test Mode	:	Mode 25: Transmit (802.11a-6Mbps)(Sector Antenna)

Channel Number	Frequency (MHz)	Chain	PPSD/MHz (dBm)	Total PPSD/MHz (dBm)	Required Limit (dBm)	Result
52	5260	А	-12.400	-9.390	-3	Pass
		В	-13.190	-10.180	-3	Pass
60	5300	А	-12.803	-9.793	-3	Pass
		В	-13.853	-10.843	-3	Pass
64	5320	А	-12.386	-9.376	-3	Pass
		В	-13.868	-10.858	-3	Pass
100	5500	А	-7.517	-4.507	-3	Pass
		В	-12.325	-9.315	-3	Pass
116	5580	А	-8.030	-5.020	-3	Pass
		В	-12.406	-9.396	-3	Pass
140	5700	А	-10.135	-7.125	-3	Pass
		В	-8.840	-5.830	-3	Pass

# 5250~5350MHz, 5470-5600 MHz and 5650-5725 MHz

Note: 1.The quantity 10\*log 2 (two antennas) is added to the spectrum peak value according to document 662911 D01. 2.Total PPSD Value = PPSD/MHz value + 10\*log 2 (two antennas).





### Channel 52: (Chain A)

## Channel 60: (Chain A)







### Channel 64: (Chain A)

## Channel 100: (Chain A)







#### Channel 116: (Chain A)

## Channel 140: (Chain A)






### Channel 52: (Chain B)

### Channel 60: (Chain B)







### Channel 64: (Chain B)

### Channel 100: (Chain B)





	the second second second second			- Swept SA	ht Spectrum Analyzer - Swept SA	👿 Keysight Sp
Frequency	07:50:04 PM Aug 27, 2015 TRACE 1 2 3 4 5 6	ALIGN AUTO	SENSE(INT		RF 50 Ω AC	Center F
	DET A NNNNN		Trig: Free Run #Atten: 30 dB	PNO: Fast IFGain:Low	11100 0.000000000	Contor I
Auto Tune	5.585 375 GHz -12.41 dBm	Mkr1		t1 dB 00 dBm	Ref Offset 1 dB iv Ref 21.00 dBm	10 dB/div
Center Free 5.580000000 GH						11.0
Start Free 5.567500000 GH		<b>●</b> <sup>1</sup>				9.00
Stop Free 5.592500000 GH						-19.0
CF Step 2.500000 MH Auto Mar						-39.0
Freq Offset 0 Hz			-			-59.0
						-69.0
	Span 25.00 MHz .000 ms (1001 pts)	Sweep 1	3.0 MHz	z #VBW	5.58000 GHz 3W 1.0 MHz	Center 5. #Res BW
		STATUS				MSG

#### Channel 116: (Chain B)

### Channel 140: (Chain B)





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Product	:	802.11 ac PCIe Module
Test Item	:	Peak Power Spectral Density
Test Site	:	No.3 OATS
Test Mode	:	Mode 26: Transmit (802.11n-20BW 14.4Mbps)(Sector Antenna)

Channel Number	Frequency (MHz)	Chain	PPSD/MHz (dBm)	Total PPSD/MHz (dBm)	Required Limit (dBm)	Result
50	5260	А	-13.034	-10.024	-3	Pass
52	5260	В	-13.514	-10.504	-3	Pass
<u> </u>	5200	А	-12.875	-9.865	-3	Pass
60	5300	В	-14.299	-11.289	-3	Pass
<u> </u>	5220	А	-12.818	-9.808	-3	Pass
64	5320	В	-14.194	-11.184	-3	Pass
100	5500	А	-8.439	-5.429	-3	Pass
100	5500	В	-12.654	-9.644	-3	Pass
11.6	5500	А	-7.800	-4.790	-3	Pass
116	5580	В	-11.991	-8.981	-3	Pass
140	5700	А	-10.588	-7.578	-3	Pass
140	5700	В	-9.332	-6.322	-3	Pass

# 5250~5350MHz, 5470-5600 MHz and 5650-5725 MHz

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

2.Total PPSD Value = PPSD/MHz value +  $10*\log 2$  (two antennas).



Agilent Spectrum Analyzer - Swept SA		1			
Center Freq 5.26000000	GHz	SENSE:INT	#Avg Type: RMS	0 07:09:42 PM Sep 25, 201 TRACE 1 2 3 4 9 TYPE A WAWAA	Frequency
Ref Offset 1 dB 10 dB/div Ref 11.00 dBm	IFGain:Low	#Atten: 20 dB	Mk	Auto Tune	
1.00					Center Free 5.260000000 GH:
9.00	<b>↓</b> <sup>1</sup>			~	Start Free 5.247500000 GH
39.0					Stop Free 5.272500000 GH
19.0					CF Ste 2.500000 MH <u>Auto</u> Ma
59.0					Freq Offse
79.0	#\/P\M	3.0 MHz	Swaan	Span 25.00 MH	lz
ISG	#1000	<b>3.0 IVINZ</b>	streep		3)

### Channel 52: (Chain A)

### Channel 60: (Chain A)





BI BE 500 ar		SENSE/INT	ALIGNALITO	07:16:11 PM Sep 25, 2015	
Center Freq 5.32000000	OGHz PNO: Fast 😱	Trig: Free Run	#Avg Type: RMS	TRACE 1 2 3 4 5 6 TYPE A WAVAWAY	Frequency
Ref Offset 1 dB 10 dB/div Ref 11.00 dBm	IFGain:Low	#Atten: 20 dB	Mkr	Auto Tune	
1.00					Center Fre 5.32000000 GH Start Fre 5.307500000 GH
19.0					Start Free 5.307500000 GH:
39.0					Stop Free 5.332500000 GH;
49.0					CF Stej 2.500000 MH <u>Auto</u> Ma
69.0					Freq Offse 0 H
-79.0	#\/BW	2.0 Miles		Span 25.00 MHz	
	#VDVV	3.0 19162	Sweep		

# Channel 64: (Chain A)

# Channel 100: (Chain A)

Keysight Sp	ectrum Analyzer - Swep	t SA			the state of the state of the			
Center F	RF 50 Ω req 5.500000	AC DOOD GHz PNO: Fast C	SENSE(INT	ALIGN AUTO #Avg Type: RMS	07:16:38 PM Aug 27, 2015 TRACE 1 2 3 4 5 6 TYPE A WWWW	Frequency		
10 dB/div	IFGain:Low Ref Offset 1 dB dB/div Ref 21.00 dBm			Mkr	Mkr1 5.505 600 GHz -8.44 dBm			
11.0						Center Freq 5.500000000 GHz		
1.00 -9.00				● <sup>1</sup>		<b>Start Freq</b> 5.487500000 GHz		
-19.0						<b>Stop Freq</b> 5.512500000 GHz		
-39.0					and the second	CF Step 2.500000 MHz <u>Auto</u> Man		
-59.0						Freq Offset 0 Hz		
-69.0 Center 5.: #Res BW	50000 GHz 1.0 MHz	#VB)	W 3.0 MHz	Sweed	Span 25.00 MHz 1.000 ms (1001 pts)			
MSG	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -			To STATE	JS			



				SA	ectrum Analyzer - Swept SA	Keysight Sp
Frequency	07:18:09 PM Aug 27, 2015	ALIGN AUTO	SENSERINT	AC	RF 50 Ω AC	X RL
	TYPE A WWWWW DET A NNNNN	#Avg Type: RMS	Trig: Free Run #Atten: 30 dB	PNO: Fast IFGain:Low	req 5.580000000	Center F
Auto Tune	5.572 375 GHz -7.80 dBm	Mkr1		Sm	Ref Offset 1 dB Ref 21.00 dBm	10 dB/div
Center Freq 5.580000000 GHz						11.0
Start Fre 5.567500000 GH					• <sup>1</sup>	-9.00
Stop Freq 5.592500000 GHz						-19.0
CF Step 2.500000 MHz Auto Mar					<b>m</b> 1	-39.0
Freq Offset 0 Hz						-59.0
	On on 25 00 MUs				50000 CU-	-69.0
-	.000 ms (1001 pts)	Sweep 1	3.0 MHz	#VBW :	1.0 MHz	#Res BW
		to STATUS				MSG

#### Channel 116: (Chain A)

Channel 140: (Chain A)

				LSA	ectrum Analyzer - Swept	Keysight Sp
Frequency	07:21:38 PM Aug 27, 2015 TRACE 1 2 3 4 5 6 TYPE A WWWWW DET A N N N N N	ALIGN AUTO #Avg Type: RMS	SENSE(INT	AC 1000 GHz PNO: Fast C	RF 50 Ω req 5.700000	Center F
Auto Tune	5.694 125 GHz -10.59 dBm	Mkr1	#Atten: 30 dB	IFGain:Low Bm	Ref Offset 1 dB Ref 21.00 dB	10 dB/div
Center Freq 5.700000000 GHz						11.0
<b>Start Freq</b> 5.687500000 GHz				<b>▲</b> <sup>1</sup>		9.00
<b>Stop Freq</b> 5.712500000 GHz						-19.0
CF Step 2.500000 MHz Auto Man	In the second second					-39.0
Freq Offset 0 Hz						-59.0
	Span 25.00 MHz	Sween 1	3.0 MHz	#\/B\A	70000 GHz	-69.0 Center 5.
	voo ma (100 1 pta)	STATUS	0.0 11112	#VDV	1.9 11112	MSG



Agilent Spectrum A	nalyzer - Swept Si	λ.						
Center Freq	5.2600000	00 GHz	SENSE:INT	AL	IGN AUTO RMS	06:57:41 PM TRAC	Sep 25, 2015	Frequency
Re 10 dB/div R€	ef Offset 1 dB ef 11.00 dBm	PNO: Fast 🖵 IFGain:Low	#Atten: 20 dB	<sub>Der ANNNNN</sub> Mkr1 5.262 200 GHz -13.51 dBm		Auto Tune		
1.00								Center Freq 5.260000000 GHz
-9.00	-			<b>♦</b> <sup>1</sup>		1		Start Freq 5.247500000 GHz
-29.0						1	A A A A A A A A A A A A A A A A A A A	Stop Freq 5.272500000 GHz
-49.0							a best for	CF Step 2.500000 MHz <u>Auto</u> Man
-69.0								Freq Offset 0 Hz
-79.0 Center 5.2600	00 GHz		2.0 8845			Span 2	5.00 MHz	
MSG	IVICIZ	#VDVV	3.0 19102	51	STATUS	iou ilis (	ioo i pisj	

## Channel 52: (Chain B)

## Channel 60: (Chain B)





Agilent Spectrum Analyzer - Swept SA					
RL RF 50 Ω AC Center Freq 5.320000000	GHz	SENSE:INT	ALIGN AUTO #Avg Type: RMS	06:59:29 PM Sep 25, 2015 TRACE 1 2 3 4 5 6	Frequency
Ref Offset 1 dB 10 dB/div Ref 11.00 dBm	PNO: Fast ⊊ IFGain:Low	#Atten: 20 dB	Mki	Auto Tune	
1.00	_				Center Fre 5.320000000 GH
19.0			<b>↓</b> <sup>1</sup>		Start Free 5.307500000 GH:
39.0					Stop Free 5.332500000 GH;
49.0				-	CF Step 2.500000 MH Auto Mar
69.0					Freq Offse 0 H
-79.0				Span 25.00 MHz	
#Res DW 1.0 IVIHZ	#VBW	3.U IVIMZ	Sweep	1.000 ms (1001 pts)	

#### Channel 64: (Chain B)

# Channel 100: (Chain B)

Keysight S	pectrum Analyzer - Swept S	A				- 2 🛛	
Center I	RF 50 Q 4 Freq 5.5000000	DOO GHZ	SENSE(INT	ALIGN AUTO #Avg Type: RMS	08:36:18 PM Aug 27, 2015 TRACE 1 2 3 4 5 6 TYPE A WWWW	Frequency	
	Ref Offset 1 dB #Atten: 30 dB Mkr1 5.504 450 GHz						
10 dB/div Log	Ref 21.00 dB	m		1 1	-12.65 0.611		
11.0						Center Freq 5.50000000 GHz	
1.00		-				Start Free 5.487500000 GH2	
-9.00				•1			
-19.0						Stop Freq	
-29.0						5.512500000 GHz	
-39.0	-				Manager	CF Step 2.500000 MHz	
-49.0						<u>Auto</u> Man	
-59.0						Freq Offset 0 Hz	
-69.0	_						
Center 5 #Res BW	.50000 GHz / 1.0 MHz	#VBW	3.0 MHz	Sweep	Span 25.00 MHz 1.000 ms (1001 pts)		
MSG				To STAT	us		



				SA	Spectrum Analyzer - Swept SA	📕 Keysight S
Frequency	08:38:28 PM Aug 27, 2015 TRACE 1 2 3 4 5 6	ALIGN AUTO	SENSE(INT	AC 000 GHz	RF 50 Q AC	Center
T. Martin	DET A NNNN		Trig: Free Run #Atten: 30 dB	PNO: Fast 😱 IFGain:Low		
Auto Tun	5.581 700 GHz -11.99 dBm	Mkr1	÷	3m	Ref Offset 1 dB Ref 21.00 dBm	10 dB/div
Center Free						
5.580000000 GH						11.0
Start From	r					1.00
Start Fre 5.567500000 GH			↓ <sup>1</sup>			-9.00
		- Annald - Constanting - Co	And the second s			-19.0
5.592500000 GH						-29.0
CF Ster	harmony -				- warden and a second	
2.500000 MH Auto Ma						-39.0
Eron Offen	ſ					-49.0
0 H						-59.0
						-69.0
	Span 25.00 MHz .000 ms (1001 pts)	Sweep 1	3.0 MHz	#VBW :	5.58000 GHz V 1.0 MHz	Center 5 #Res BW
-		To STATUS	here on the All States of the		V (1997) 3157070	MSG

### Channel 116: (Chain B)

### Channel 140: (Chain B)





Product	:	802.11 ac PCIe Module
Test Item	:	Peak Power Spectral Density
Test Site	:	No.3 OATS
Test Mode	:	Mode 27: Transmit (802.11n-40BW 30Mbps)(Sector Antenna)

Channel Number	Frequency (MHz)	Chain	PPSD/MHz (dBm)	Total PPSD/MHz (dBm)	Required Limit (dBm)	Result
5.4	5270	А	-13.338	-10.328	-3	Pass
54	5270	В	-13.801	-10.791	-3	Pass
(2)	5210	А	-12.361	-9.351	-3	Pass
62	5510	В	-13.711	-10.701	-3	Pass
102	5510	А	-11.172	-8.162	-3	Pass
102	5510	В	-16.116	-13.106	-3	Pass
110	5550	А	-11.128	-8.118	-3	Pass
110	5550	В	-16.331	-13.321	-3	Pass
124	5 (70)	А	-12.018	-9.008	-3	Pass
134	5670	В	-12.009	-8.999	-3	Pass

# 5250~5350MHz, 5470-5600 MHz and 5650-5725 MHz

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

2. Total PPSD Value = PPSD/MHz value +  $10*\log 2$  (two antennas).



	07:16:47 PM Sep 25, 2015	ALIGNAUTO	SENSE:INT		RF 50 Ω AC	RL
Frequency	TRACE 1 2 3 4 5 6 TYPE A WWWWW	#Avg Type: RMS	Trig: Free Run	Center Freq 5.270000000 GHz		
Auto Tun	1 5.267 05 GHz -13.34 dBm	Mkr1	#Atten: 20 dB	IFGain:Low	Ref Offset 1 dB Ref 11.00 dBm	0 dB/div
Center Fre 5.270000000 GH				_		1.00
Start Fre 5.245000000 GH			<u>+</u>			9.00
Stop Fre 5.295000000 GH					-	29.0
CF Stej 5.000000 MH Auto Ma					- Ar	49.0
Freq Offse 0 H						69.0
						79.0
	Span 50.00 MHz 000 ms (1001 pts)	Sweep 1.	3.0 MHz	#VBW 3	27000 GHz 1.0 MHz	enter 5.2 Res BW
	Span 50.00 MHz 000 ms (1001 pts)	Sweep 1.	3.0 MHz	#VBW 3	27000 GHz 1.0 MHz	Res BW

#### Channel 54: (Chain A)

## Channel 62: (Chain A)





					ectrum Analyzer - Swept SA	Keysight Sp
Frequency	07:28:22 PM Aug 27, 2015	ALIGN AUTO	SENSE:INT		RF 50 Ω AC	X RL
	TYPE A WWWWW DET A NNNNN	#Avg Type. Rwis	Trig: Free Run #Atten: 30 dB	PNO: Fast IFGain:Low	req 5.510000000	Center F
Auto Tune	1 5.519 70 GHz -11.17 dBm	Mkr	1. J.		Ref Offset 1 dB Ref 21.00 dBm	10 dB/div
Center Fred 5.510000000 GH:						11.0
Start Fred 5.485000000 GH2		1				1.00 -9.00
Stop Fred 5.535000000 GH;					F	-19.0
CF Step 5.000000 MH: Auto Mar	A summer second					-39.0
Freq Offse 0 Ha						-59.0
	Spop 50 00 Mile				51000 CH-	-69.0
	.000 ms (1001 pts)	Sweep 1	3.0 MHz	#VBW :	1.0 MHz	#Res BW
		In STATUS				MSG

### Channel 102: (Chain A)

### Channel 110: (Chain A)





	A CARLON AND A CARLO	-				ept SA	um Analyzer - Swe	Keysight Spec
Frequency	07:35:08 PM Aug 27, 2015 TRACE 1 2 3 4 5 6 TYPE A WWWW	ALIGN AUTO	SENSE(INT	Trig: F	IZ	AC	RF 50 Ω q 5.67000	enter Fre
Auto Tune	5.656 95 GHz	Mkr	: 30 dB	#Atten	Gain:Low	IF	Pof Offeet 1 d	-
	-12.02 dBm		-		_	Bm	Ref 21.00 d	0 dB/div
Center Fred 5.670000000 GH:						1		11.0
Start Fred 5.645000000 GH:						1		1.00 9.00
Stop Free 5.695000000 GH:			Y				F	19.0
CF Step 5.000000 MH Auto Mar								39.0
Freq Offse 0 H:								59,0
	Span 50.00 MHz	Swoon 4			#)/[2]4		000 GHz	enter 5.6
	ooo ms (Too Tpts)	Sweep 1.	12	a 0.0 IAL	#VOV			SG SG

### Channel 134: (Chain A)





## Channel 54: (Chain B)

### Channel 62: (Chain B)





			-			ept SA	trum Analyzer - Swe	Keysight Spe
Frequency	08:53:19 PM Aug 27, 2015	ALIGN AUTO	INT	SENS		AC	RF 50 Ω	RL
	TYPE A WWWW DET A NNNNN	j Type: RWS	un B	Trig: Free #Atten: 30	Z NO: Fast 😱 Sain: Low	00000 GH PN IFG	eq 5.51000	Center Fi
Auto Tune	1 5.515 15 GHz -16.12 dBm	Mkr				iB IBm	Ref Offset 1 c Ref 21.00 c	10 dB/div
Center Fred 5.510000000 GHz								11.0
Start Fred 5.485000000 GHz								1.00 -9.00
Stop Fred 5.535000000 GHz				and the second se			T	-19.0
CF Step 5.000000 MHz Auto Mar							-	-39.0
Freq Offset 0 Hz							-	-59.0
								-69.0
	Span 50.00 MHz .000 ms (1001 pts)	Sweep 1.		3.0 MHz	#VBW :		1000 GHz I.0 MHz	Center 5.4 #Res BW
		In STATUS						ASG

#### Channel 102: (Chain B)

## Channel 110: (Chain B)





AC SENSE:INT ALIGN AUTO 08:57:23 PM Aug 27, 2015 0000 GHz #Avg Type: RMS TRACE [1 2 3 4 5 6 PMO: Fast Frequency IFGain:Low #Atten: 30 dB DET A NNNNN
IFGain:Low #Atten: 30 dB
Bm -12.01 dBm
Center Freq
5.67000000 GHz
Start Freq
15.645000000 GHz
Stop Freq 5.69500000 GHz
CEStar
5.000000 MHz Auto Mar
Freq Offset
Span 50.00 MHz
#VBW 3.0 MHz Sweep 1.000 ms (1001 pts)

## Channel 134: (Chain B)



Product	:	802.11 ac PCIe Module
Test Item	:	Peak Power Spectral Density
Test Site	:	No.3 OATS
Test Mode	:	Mode 28: Transmit (802.11ac-20BW-14.4Mbps)(Sector Antenna)

Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm)	Required Limit (dBm)	Result
144	5720 (D 12)	А	-10.810		-7.800	-3	Pass
144	5/20(Band3)	В	-9.020		-6.010	-3	Pass
144	5720(D 14)	А	-20.070	6.980	-10.080	30	Pass
144	5/20(Band4)	В	-18.220	6.980	-8.230	30	Pass

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

2.Total PPSD Value = PPSD/MHz value +  $10*\log 2$  (two antennas) + BWCF.



Keysight Sp	ectrum Analyzer -	Swept SA			,	
Center F	RF 50 req 5.720	Ω AC 000000 GHz	SENSE(INT	ALIGN AUTO #Avg Type: RMS	06:37:12 PM Aug 27, 2015 TRACE 1 2 3 4 5 6	Frequency
	Ref Offset	PNO: Fast IFGain:Lov	#Atten: 30 dB	Mkr2	2 5.713 825 GHz	Auto Tune
10 dB/div Log 11.0 1.00	Ref 21.00	2 <sup>2</sup>			-10.81 UBII	Center Freq 5.720000000 GHz
-19.0 -29.0 -39.0	1					Start Freq 5.707500000 GHz
-49.0 -59.0 -69.0						<b>Stop Freq</b> 5.732500000 GHz
Center 5. #Res BW	72000 GHz 1.0 MHz	#V	BW 3.0 MHz	Sweep 1	Span 25.00 MHz I.000 ms (1001 pts)	CF Step 2.500000 MHz Auto Man
MKR MODE T   1 N 1   2 N 1   3 4 5   6 7 7   8 9 10   11 - -		X 5.725 000 GHz 5.713 825 GHz	-11.49 dBm -10.81 dBm	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	Freq Offset 0 Hz
MSG				STATU	s	

## Channel 144: (Chain A)

# Channel 144: (Chain A)

Keysigh	it Spectrun	Analyzer - Swe	ept SA							
Center	Freq	F 50 Ω 5.72000	AC 10000 GHz PNO: Eas		SENSE(INT	#Avg	ALIGN AUTO	06:37:31 P TRAC TY	M Aug 27, 2015 DE 1 2 3 4 5 6 PE A WWWWW	Frequency
10 dB/di	Re iv <b>R</b> e	ef Offset 1 o ef 21.00 o	IFGain:Lo IB IBm	w #A	tten: 30 dB		Mkr2	5.725 C -20.	50 GHz 07 dBm	Auto Tune
11.0 1.00										Center Fred 5.720000000 GHz
-9.00		from	www.ww	www.	m	mpum	2	my		Start Free 5.707500000 GH;
-49.0 -59.0	mm								more	Stop Free 5.732500000 GH;
Center #Res E	5.720 SW 100	00 GHz kHz	#\	/BW 30	) kHz		Sweep 3	Span 2 .133 ms (	5.00 MHz 1001 pts)	CF Step 2.500000 MH
MKR MOD	e trc so		X	2	Y	UNCTION	FUNCTION WIDTH	FUNCTI	ON VALUE	Auto Mar
2 N 3 4 5	1 f		5.725 050 GHz	-20	0.07 dBm				E	Freq Offse 0 H:
6 7 8 9 10										
11	<u>   </u>				m	-				
MSG							To STATUS	3		



Channel	144: (	(Chain	B)
		(	_ /

Keysight Spectrum	Analyzer - Swept SA								
Center Freq	F 50 Ω AC 5.720000000 GH		SENSE(INT	ALIGN AUTO #Avg Type: RMS	07:56:17 PM Aug 27, 2015 TRACE 1 2 3 4 5 6 TYPE A WWWWW	Frequency			
Re 10 dB/div Re	of Offset 1 dB	Gain:Low #Att	en: 30 dB	Mkr2	Mkr2 5.716 825 GHz -9.02 dBm				
11.0 1.00				1		Center Freq 5.720000000 GHz			
-19.0						Start Free 5.707500000 GH;			
-49.0 -59.0 -69.0						Stop Freq 5.732500000 GHz			
Center 5.720 #Res BW 1.0	00 GHz MHz	#VBW 3.0 N	ЛНz	Sweep 1	Span 25.00 MHz .000 ms (1001 pts)	CF Step 2.500000 MHz Auto Man			
MXR M/00E TRC S5   1 N 1 f   2 N 1 f   3 4 - -   5 - 6 -   7 - 8 -   9 - 10 -   11 - - -	t X 5.725 00 5.716 82	9 GHz -9.	27 dBm 02 dBm	NCTION FUNCTION WIDTH	FUNCTION VALUE	Freq Offset 0 Hz			
MSG		TI		STATUS	,				

# Channel 144: (Chain B)

Keysight	Spectrum	Analyzer - Swept S	A					-	
Center	Frea	50 Ω A 5.7200000	000 GHz	SENSE(I	NT #Avg	ALIGN AUTO Type: RMS	07:56:35 P	M Aug 27, 2015 E 1 2 3 4 5 6	Frequency
			PNO: Fast C IFGain:Low	Trig: Free Ru #Atten: 30 dB	n	Mkr2	5 725 C	25 GHZ	Auto Tune
10 dB/di	Re v Re	f Offset 1 dB f 21.00 dB	m			inita 2	-18.	22 dBm	
11.0 1.00									Center Fred 5.720000000 GH;
-19.0		hora	<u>. 20400000000000000000000000000000000000</u>	sajaa.aaaaaa aa	100000000000	<u>abcacarborat</u>	ww		Start Free 5.707500000 GH:
-49.0 ~~ -59.0 ~~	man							many	<b>Stop Freq</b> 5.732500000 GHz
Center #Res B	5.720 W 100	00 GHz kHz	#VB	W 300 kHz		Sweep 3	Span 2 .133 ms (	5.00 MHz 1001 pts)	CF Step 2.500000 MH
MKR MODE	TRC SC		X	19.42 dBm	FUNCTION	FUNCTION WIDTH	FUNCTI	DN VALUE	<u>Auto</u> Mar
2 N 3 4 5	1 f	Ì	5.725 025 GHz	-18.22 dBm				=	Freq Offse 0 Ha
6 7 8 9 10									
11	ļŢ	1		m					
MSG						To STATUS	S		



Product	:	802.11 ac PCIe Module
Test Item	:	Peak Power Spectral Density
Test Site	:	No.3 OATS
Test Mode	:	Mode 29: Transmit (802.11ac-40BW-30Mbps)(Sector Antenna)

Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm)	Required Limit (dBm)	Result
1.40	5710(D 12)	А	-13.130		-10.120	-3	Pass
142	5/10(Band3)	В	-11.500		-8.490	-3	Pass
1.40	5710/D 14)	А	-23.320	6.980	-13.330	30	Pass
142	5/10(Band4)	В	-20.770	6.980	-10.780	30	Pass

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

2.Total PPSD Value = PPSD/MHz value +  $10*\log 2$  (two antennas) + BWCF.



Keysight Sp	ectrum Analyz	er - Swept SA					/		
Center F	RF req 5.7*	50 Ω AC	łz	SENSE:	INT #Av	ALIGN AUTO	06:40:27 P TRA	MAug 27, 2015 CE 1 2 3 4 5 6	Frequency
10 dB/div	Ref Offs Ref 21	et 1 dB	NO: Fast Gain:Low	#Atten: 30 dl	3	Mk	r2 5.697 -13.	80 GHz 13 dBm	Auto Tune
Log 11.0 1.00		2							Center Freq 5.710000000 GHz
-9.00 -19.0 -29.0 -39.0	1								Start Freq 5.685000000 GHz
-49.0 -59.0 -69.0									<b>Stop Freq</b> 5.735000000 GHz
Center 5. #Res BW	71000 G 1.0 MHz	Hz	#VBW	( 3.0 MHz		Sweep	Span 5 1.000 ms (	0.00 MHz (1001 pts)	CF Step 5.000000 MHz Auto Man
MXR MODE T   1 N 4   2 N 3   4 5 6   7 7 8   9 10 11	RC SCL	X 5.725 0 5.697 8	0 GHz 0 GHz	Y -14.35 dBm -13.13 dBm	FUNCTION			ON VALUE	Freq Offset 0 Hz
MSG				101		To STATU	JS		

## Channel 142: (Chain A)

# Channel 142: (Chain A)

Keysight	Spectrum	Analyzer - Swept SA	4								
Center	Freq	50 Ω AC 5.7100000	00 GHz	· East	SEN	Run	#Avg Typ	ALIGN AUTO	06:40:45 F TRA TV	PM Aug 27, 2015 CE 1 2 3 4 5 6 (PE A WWWWW	Frequency
10 dB/div	Re / Re	f Offset 1 dB f 21.00 dBn	IFGai	in:Low	#Atten: 30	dB		Mkr	2 5.725 -23.	00 GHz 32 dBm	Auto Tune
11.0											Center Freq 5.710000000 GHz
-9.00 -19.0 -29.0		Mananakanak	manna	WANNAMANA	monning	juniwilanënar J	awamawaa wa	0.000 March 100 March	2		Start Freq 5.685000000 GHz
-49.0	water linn/H									Munices training	<b>Stop Freq</b> 5.735000000 GHz
Center #Res Bl	5.7100 W 100	00 GHz kHz		#VBW	300 kHz			Sweep 6	Span : 5.200 ms	50.00 MHz (1001 pts)	CF Step 5.000000 MHz Auto Man
MKR MODE 1 N 2 N 3 4 5 6	TRC SC 1 f 1 f		x 5.725 00 0 5.725 00 0	GHz GHz	Y -23.32 dB -23.32 dB	m m	CTION	NCTION WIDTH	FUNCT	ION VALUE	Freq Offset 0 Hz
7 8 9 10 11											
MSG					m			To STATU	s		



Keysight Spe	ctrum An	alyzer - Swept SA						,		
Center Fi	RF req 5.	50 Ω AC	00 GHz	Si Trian Fa	ENSE(INT	ALI #Avg Type: I	IGN AUTO RMS	08:12:24 Pr TRAC	Aug 27, 2015	Frequency
10 dB/diu	Ref C	)ffset 1 dB	PNO: Fast IFGain:Low	#Atten:	30 dB		Mkr2	5.707 -11.5	70 GHz	Auto Tune
11.00		21.00 081						1		Center Freq 5.710000000 GHz
-19.0 -29.0 -39.0							*	1		Start Freq 5.685000000 GHz
-49.0 -59.0 -69.0										<b>Stop Freq</b> 5.735000000 GHz
Center 5.3 #Res BW	71000 1.0 M	GHz Hz	#VI	BW 3.0 MH:	z	Sv	veep 1.0	Span 5 )00 ms (	0.00 MHz 1001 pts)	CF Step 5.000000 MHz Auto Man
McB Mode Fit   1 N 1   2 N 1   3 4 -   5 - -   6 - -   7 - -   8 - -   9 - -   10 - -			x 5.725 00 GHz 5.707 70 GHz	+ -12.29 c -11.50 c	IBm IBm IBm			FUNCTIO	5 VALUE	Freq Offset 0 Hz
MSG				m			STATUS			

## Channel 142: (Chain B)

# Channel 142: (Chain B)

Keysight Sp	ectrum Analyzer - Sv	wept SA				
Center F	RF 50 G	2 AC 00000 GHz	SENSE(INT	ALIGN AUTO #Avg Type: RMS	08:12:42 PM Aug 27, 2015 TRACE 1 2 3 4 5 6	Frequency
		PNO: Fast C IFGain:Low	#Atten: 30 dB			Auto Tune
10 dB/div	Ref Offset 1 Ref 21.00	dB dBm		INIK	-20.77 dBm	
11.0 1.00						Center Fred 5.710000000 GH:
-9.00 -19.0 -29.0	morris	งกลางและทางเรากลางเราการและการเป็นการเป็นการเป็นการเป็นการเป็นการเป็นการเป็นการเป็นการเป็นการเป็นการเป็นการเป็น	namenanana muun		2	Start Free 5.685000000 GH;
-39.0 -49.0 weeked -59.0	mannahurt				- Marcian Masses	Stop Frec 5.735000000 GH;
Center 5 #Res BW	.71000 GHz 100 kHz	#VB	W 300 kHz	Sweep	Span 50.00 MHz 6.200 ms (1001 pts)	CF Ster 5.000000 MH
MKR MODE T 1 N 2 N 3	RC SCL 1 f 1 f	X 5.725 00 GHz 5.725 00 GHz	Y -20.77 dBm -20.77 dBm	FUNCTION FUNCTION WIDT	H FUNCTION VALUE	Freq Offse
4 5 6 7					E	0 H:
9 10 11				_		4000
MSG				STAT	us	



Product	:	802.11 ac PCIe Module
Test Item	:	Peak Power Spectral Density
Test Site	:	No.3 OATS
Test Mode	:	Mode 30: Transmit (802.11ac-80BW-65Mbps)(Sector Antenna)

Channel Number	Frequency (MHz)	Chain	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm)1	Required Limit (dBm)	Result
50	5200	А	-14.710		-11.700	-3.0	Pass
58	5290	В	-15.760		-12.750	-3.0	Pass
100	5520	А	-15.594		-12.584	-3.0	Pass
106	5530	В	-19.900		-16.890	-3.0	Pass
100	5(10	А	-14.290		-11.280	-3.0	Pass
122	5610	В	-17.960		-14.950	-3.0	Pass
120	5690	А	-14.960		-11.950	-3.0	Pass
138	(Band3)	В	-14.460		-11.450	-3.0	Pass
120	5690	А	-26.580	6.980	-16.590	30	Pass
138	(Band4)	В	-24.670	6.980	-14.680	30	Pass

## 5250~5350MHz, 5470-5600 MHz and 5650-5725 MHz

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

2.Total PPSD Value = PPSD/MHz value + 10\*log 2 (two antennas)



	The second s			- Swept SA	ght Spectrum Analyzer - Swept	Keysight
Frequency	06:43:58 PM Aug 27, 2015 TRACE 1 2 3 4 5 6	ALIGN AUTO #Avg Type: RMS	SENSE(INT		RF 50 Ω	XI RL
1	TYPE A WWWW DET A NNNNN		Trig: Free Run #Atten: 30 dB	PNO: Fast 😱 IFGain:Low	a 1160 3.230000	Center
Auto Tune	r1 5.306 6 GHz -14.71 dBm	Mk	č., - 1	1 dB 10 dBm	Ref Offset 1 dB div Ref 21.00 dE	10 dB/div
Center Free 5.290000000 GH						11.0
Start Free 5.240000000 GH:						1.00 -9.00
Stop Freq 5.340000000 GHz			- manual - manual			-19.0
CF Step 10.000000 MH Auto Mar						-39.0
Freq Offse 0 H						-59.0
						-69.0
	Span 100.0 MHz .000 ms (1001 pts)	Sweep 1	3.0 MHz	z #VBW	r 5.29000 GHz BW 1.0 MHz	Center #Res B
		The STATUS				MSG

### Channel 58: (Chain A)

### Channel 106: (Chain A)





				t SA	ectrum Analyzer - Swept SA	Keysight Spe
Frequency	06:53:09 PM Aug 27, 2015	ALIGN AUTO	SENSE(INT	AC	RF 50 Ω AC	X RL
	TYPE A WWWW DET A NNNN	#Avg Type: RMS	Trig: Free Run #Atten: 30 dB	PNO: Fast	req 5.6100000	Center F
Auto Tun	r1 5.593 9 GHz -14.29 dBm	Mk	witten ov up	3 3 3m	Ref Offset 1 dB Ref 21.00 dBm	10 dB/div
Center Free 5.610000000 GH						11.0
Start Free 5.560000000 GH				1		1.00 -9.00
Stop Fred 5.66000000 GHz						-19.0
CF Step 10.000000 MH Auto Mar	1				- Alexandre	-39.0
Freq Offse 0 H						-59.0
						-69.0
	Span 100.0 MHz .000 ms (1001 pts)	Sweep 1	3.0 MHz	#VBW	61000 GHz 1.0 MHz	Center 5.0 #Res BW
		The STATUS				MSG

## Channel 122: (Chain A)

## Channel 138 (Band3): (Chain A)

Keysight Sp	ectrum Analyzer	- Swept SA							- 2 ×
Center F	req 5.690	50 Ω AC 0000000 GH PN	Z IO: Fast	SENSE(I)	nt #Av: n	ALIGN AUTO g Type: RMS	06:59:18 P TRAC TYP	MAug 27, 2015 E 1 2 3 4 5 6 E A WWWWW	Frequency
10 dB/div	Ref Offse Ref 21.0	1FG t1 dB <b>)0 dBm</b>	Gain:Low	#Atten: 30 dB		M	(r2 5.66) -14.9	2 6 GHz 96 dBm	Auto Tune
11.0 1.00									Center Freq 5.69000000 GHz
-9.00 -19.0 -29.0	T								Start Freq 5.640000000 GHz
-49.0 -59.0 -69.0									Stop Freq 5.740000000 GHz
Center 5 #Res BW	69000 GH 1.0 MHz	z	#VBV	V 3.0 MHz		Sweep 1	Span 1 .000 ms (	00.0 MHz 1001 pts)	CF Step 10.000000 MHz
MKR MODE 1 1 N 2 N 3 4 5	RC SCL f f	× 5.725 ( 5.662 (	0 GHz 3 GHz	-17.81 dBm -14.96 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION	DN VALUE	Auto Man Freq Offset 0 Hz
6 7 8 9 10 11									
MSG	-		-	I			s		



	and the second s					pt SA	nalyzer - Swe	ectrum A	/sight S	🚺 Ke
Frequency	06:59:36 PM Aug 27, 2015 TRACE 1 2 3 4 5 6	ALIGN AUTO	SENSE(INT #Avg T			AC 0000 GH	50 Ω .69000	RF req 5	ter l	Cen
	DETANNNNN		-	#Atten: 30 dB	PNO: Fast 😱 IFGain:Low					
Auto Tune	r2 5.725 6 GHz -26.58 dBm	Mk				B IBm	Offset 1 c 21.00 c	Ref Ref	3/div	10 d
Center Freq 5.69000000 GHz								_		11.0 1.00
Start Freq 5.640000000 GHz	2	กรุงสัปนะสถาดเราะให้ประกับให้กระจังกรุงป	na an a	ananana jugah	สารสารสารสาราชาวิทาร	เสราะ เสราะ	รูซึ่งสกุก <sup>เม</sup> าการจะสำคร			-9.00 -19.0 -29.0 -39.0
Stop Freq 5.740000000 GHz	And the second s						•	openeeron of	AN POSTA	-49.0 -59.0 -69.0
CF Step 10.000000 MHz Auto Man	Span 100.0 MHz 2.40 ms (1001 pts)	Sweep 1		300 kHz	#VBW		) GHz (Hz	.69000 100	ter 5 s BV	Cen #Re
	FUNCTION VALUE	FUNCTION WIDTH	FUNCT	-26 66 dBm	0 GHz	X 5 725		RC SCL	MODE	MKR 1
Freq Offset 0 Hz	=			-26.58 dBm	6 GHz	5.725		1 f	N	2 3 4 5 6
				-						7 8 9 10
		STATUS		m						MSG

### Channel 138 (Band4): (Chain A)



- 6 X					pectrum Analyzer - Swept SA	Keysight Sp
Frequency	08:18:08 PM Aug 27, 2015 TRACE 1 2 3 4 5 6 TYPE A WWWW	ALIGN AUTO #Avg Type: RMS	SENSE(INT	) GHz	RF 50 Ω AC Freq 5.290000000	Center F
Auto Tune	r1 5.277 3 GHz -15.76 dBm	Mk	#Atten: 30 dB	IFGain:Low	Ref Offset 1 dB Ref 21.00 dBm	10 dB/div
Center Freq 5.29000000 GHz						11.0
<b>Start Freq</b> 5.240000000 GHz						9.00
<b>Stop Freq</b> 5.340000000 GHz						-19.0
CF Step 10.000000 MHz Auto Man	and the second s					-39.0
Freq Offset 0 Hz			_			-59.0
						-69.0
	Span 100.0 MHz .000 ms (1001 pts)	Sweep 1	3.0 MHz	#VBW :	29000 GHz 1.0 MHz	Center 5. #Res BW
		STATUS				MSG

# Channel 58: (Chain B)

# Channel 106: (Chain B)

- 8 ×					trum Analyzer - Swept SA	Keysight Spe	
Frequency	08:19:50 PM Aug 27, 2015 TRACE 1 2 3 4 5 6 TYPE A WWWW	ALIGN AUTO	RF 50 Ω AC SENSE(INT) A   Freq 5.530000000 GHz #Avg Type #Avg Type   PN0: Fast Trig: Free Run #Avg Type		RL RF 50 Ω AC   Center Freq 5.530000000 GHz PNO: Fast C		
Auto Tune	(r1 5.518 7 GHz -19.90 dBm	Mł	#Atten: 30 dB	IFGain:Low	Ref Offset 1 dB Ref 21.00 dBm	10 dB/div	
Center Freq 5.530000000 GHz						11.0	
Start Freq 5.480000000 GHz						9.00	
<b>Stop Freq</b> 5.580000000 GHz	- manual -	and a state of the			-	-19.0	
CF Step 10.000000 MHz <u>Auto</u> Man					-	-39.0	
Freq Offset 0 Hz						-59.0	
	Span 100.0 MHz				3000 GHz	-69.0	
	1.000 ms (1001 pts)	Sweep 1	3.0 IVIHZ	#VBW	.0 IVIHZ	FRES BW	



					Swept SA	ectrum Analyzer - Sw	Keysight Sp
Frequency	08:21:36 PM Aug 27, 2015 TRACE 1 2 3 4 5 6	ALIGN AUTO	SENSE(INT	GHz	000000 GH	RF 50 Ω rea 5.61000	Center F
The Star Card	DET A NNNN		Trig: Free Run #Atten: 30 dB	PNO: Fast 😱 IFGain:Low	P		
Auto Tune	r1 5.619 1 GHz -17.96 dBm	Mk			1 dB 0 dBm	Ref Offset 1 Ref 21.00	10 dB/div
Center Fred			-	10.00			Log
5.61000000 GHz							11.0
Start Free							1.00
5.56000000 GHz							-9.00
20.20		han			-		.19.0
Stop Fred 5.66000000 GHz						<b>_</b>	20.0
OF Otom							-29.0
10.000000 MHz Auto Mar						ma	-39.0
			-				-49.0
Freq Offset			-				-59.0
							-69.0
				1 10 1		4.4	
	Span 100.0 MHz .000 ms (1001 pts)	Sweep 1	3.0 MHz	#VBW 3	0	61000 GHz 1.0 MHz	Center 5. #Res BW
		To STATUS					MSG

### Channel 122: (Chain B)

### Channel 138: (Chain B)





			And the second			vept SA	Analyzer - Sw	ectrum A	sight Sp	Ke
Frequency	08:26:04 PM Aug 27, 2015 TRACE 1 2 3 4 5 6 TYPE A WWWW	ALIGN AUTO #Avg Type: RMS		Tria: Fr	Hz	00000 GH	50 G	req 5	ter F	Cen
Auto Tune	2 5.725 9 GHz -24.67 dBm	M	n: 30 dB	#Atten:	Gain:Low	dB dBm	Offset 1 21.00	Ref Ref	3/div	10 d
Center Freq 5.69000000 GHz										Log 11.0 1.00
Start Freq 5.640000000 GHz	2 	สถางไปมีกระสารฎหัวเหล <sub>าน</sub> สมาร์หลือจะกับประกังสาร	Num yantarahahah	ปการสาระจากระสงสารที่ไม	อน <sup>เก</sup> ลงให้หม่งในสถา <sup>5</sup> ป	ระมูลส <sub>าส</sub> ตรมอ <sub>ันสาร</sub> กับประกั	ylufreesydod			-9.00 -19.0 -29.0 -39.0
<b>Stop Freq</b> 5.740000000 GHz	Arthodologian and and							and and a	and a second	-49.0 -59.0 -69.0
CF Step 10.000000 MHz Auto Man	Span 100.0 MHz 40 ms (1001 pts)	Sweep 1	Hz	W 300 KH	#VB		0 GHz kHz	69000 100	ter 5. s BW	Cen #Re
Freq Offset 0 Hz		ION FUNCTION WIDTH		-24.83 ( -24.67 (	i 0 GHz	x 5.725 5.725			N N	MXR 1 2 3 4 5 6 7 8 9 10 11
	*	To STATU:		m						MSG

# Channel 138: (Chain B)



# 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	Х	Loop Antenna	Teseq	HLA6120 / 26739	Jul., 2015
	Х	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2015
	Х	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2015
	Х	Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2015
	X Pre-Amplifier		QTK	QTK-AMP-03 / 0003	May, 2015
	Х	Pre-Amplifier	QTK	AP-180C / CHM_0906076	Sep., 2015
	Х	Pre-Amplifier	MITEQ	AMF-4D-180400-45-6P/ 925975	Mar., 2015
	Х	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2015
	Х	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2015
	Х	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2015
	Х	Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	Х	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

Note:

- 1. All equipment is calibrated once a year or as required by manufacturer.
- 2. All equipment is calibrated to traceable calibration procedures.
- 3. The test instruments marked by "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	:	802.11 ac PCIe Module
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11a-6Mbps)(Dipole Antenna) (5260MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	dBµV/m	dB	dBµV/m
Horizontal					
Peak Detector:					
10520.000	14.015	34.110	48.125	-25.875	74.000
15780.000	*	*	*	*	74.000
21040.000	*	*	*	*	74.000
26300.000	*	*	*	*	74.000
Average					
<b>Detector:</b>					
*	*	*	*	*	*

# Vertical

## **Peak Detector:**

10520.000	14.818	39.010	53.828	-20.172	74.000
15780.000	*	*	*	*	74.000
21040.000	*	*	*	*	74.000
26300.000	*	*	*	*	74.000
Average					
Detector:					
*	*	*	*	*	*

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 + Correction Factor.
- 5. Correction Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data is under the limit of average detection.
- 7. The emission levels of other frequencies are greater then 10db under the limit and not shown in test report.

Product	:	802.11 ac PCIe Module
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11a-6Mbps)(Dipole Antenna) (5300MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	$dB\mu V/m$	dB	dBµV/m
Horizontal					
Peak Detector:					
10600.000	14.550	35.420	49.969	-24.031	74.000
15900.000	*	*	*	*	74.000
21200.000	*	*	*	*	74.000
26500.000	*	*	*	*	74.000
Average					
<b>Detector:</b>					
*	*	*	*	*	*
Vertical					
Peak Detector:					
10600.000	14.881	36.170	51.051	-22.949	74.000
15900.000	*	*	*	*	74.000
21200.000	*	*	*	*	74.000
26500.000	*	*	*	*	74.000
Average					
<b>Detector:</b>					
*	*	*	*	*	*

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 + Correction Factor.
- 5. Correction Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data is under the limit of average detection.
- 7. The emission levels of other frequencies are greater then 10db under the limit and not shown in test report.

Product	:	802.11 ac PCIe Module
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11a-6Mbps)(Dipole Antenna) (5320MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	$dB\mu V/m$	dB	dBµV/m
Horizontal					
Peak Detector:					
10640.000	14.690	35.120	49.810	-24.190	74.000
15960.000	*	*	*	*	74.000
21280.000	*	*	*	*	74.000
26600.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*
Vertical					
Peak Detector:					
10640.000	15.083	35.780	50.863	-23.137	74.000
15960.000	*	*	*	*	74.000
21280.000	*	*	*	*	74.000
26600.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*

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 + Correction Factor.
- 5. Correction Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data is under the limit of average detection.
- 7. The emission levels of other frequencies are greater then 10db under the limit and not shown in test report.
| Product   | : | 802.11 ac PCIe Module                                      |
|-----------|---|--|
| Test Item | : | Harmonic Radiated Emission Data                            |
| Test Site | : | No.3 OATS  |
| Test Mode | : | Mode 1: Transmit (802.11a-6Mbps)(Dipole Antenna) (5500MHz) |

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	dBµV/m	dB	dBµV/m
Horizontal					
Peak Detector:					
11000.000	16.399	33.990	50.389	-23.611	74.000
16500.000	*	*	*	*	74.000
22000.000	*	*	*	*	74.000
27500.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*
Vertical					
Peak Detector:					
11000.000	17.132	34.110	51.242	-22.758	74.000
16500.000	*	*	*	*	74.000
22000.000	*	*	*	*	74.000
27500.000	*	*	*	*	74.000
Average					
<b>Detector:</b>					
*	*	*	*	*	*

- 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 + Correction Factor.
- 5. Correction Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data is under the limit of average detection.
- 7. The emission levels of other frequencies are greater then 10db under the limit and not shown in test report.

Product	:	802.11 ac PCIe Module
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11a-6Mbps)(Dipole Antenna) (5580MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	dBµV/m	dB	dBµV/m
Horizontal					
Peak Detector:					
11160.000	16.664	39.270	55.935	-18.065	74.000
16800.000	*	*	*	*	74.000
22400.000	*	*	*	*	74.000
28000.000	*	*	*	*	74.000
Average					
<b>Detector:</b>					
11160.000	16.664	23.910	40.575	-13.425	54.000
Vertical					
<b>Peak Detector:</b>					
11160.000	17.643	45.900	63.543	-10.457	74.000
16800.000	*	*	*	*	74.000
22400.000	*	*	*	*	74.000
28000.000	*	*	*	*	74.000
Average					
<b>Detector:</b>					
11160.000	17.643	29.730	47.373	-6.627	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 + Correction Factor.
- 5. Correction Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data is under the limit of average detection.
- 7. The emission levels of other frequencies are greater then 10db under the limit and not shown in test report.

Product	:	802.11 ac PCIe Module
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit (802.11a-6Mbps)(Dipole Antenna) (5700MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	dBµV/m	dB	dBµV/m
Horizontal					
Peak Detector:					
11400.000	16.530	34.380	50.911	-23.089	74.000
17100.000	*	*	*	*	74.000
22800.000	*	*	*	*	74.000
28500.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*
Vertical					
Peak Detector:					
11400.000	17.138	34.700	51.838	-22.162	74.000
17100.000	*	*	*	*	74.000
22800.000	*	*	*	*	74.000
28500.000	*	*	*	*	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 + Correction Factor.
- 5. Correction Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data is under the limit of average detection.
- 7. The emission levels of other frequencies are greater then 10db under the limit and not shown in test report.

Product	:	802.11 ac PCIe Module
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11n-20BW 14.4Mbps)(Dipole Antenna) (5260MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	$dB\mu V/m$	dB	dBµV/m
Horizontal					
Peak Detector:					
10520.000	14.015	34.320	48.335	-25.665	74.000
15780.000	*	*	*	*	74.000
21040.000	*	*	*	*	74.000
26300.000	*	*	*	*	74.000
Average					
<b>Detector:</b>					
*	*	*	*	*	*
Vertical					
Peak Detector:					
10520.000	14 818	38 380	53 198	-20 802	74 000

10520.000	14.818	38.380	53.198	-20.802	/4.000
15780.000	*	*	*	*	74.000
21040.000	*	*	*	*	74.000
26300.000	*	*	*	*	74.000
Average					
<b>Detector:</b>					
*	*	*	*	*	*

- 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 + Correction Factor.
- 5. Correction Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data is under the limit of average detection.
- 7. The emission levels of other frequencies are greater then 10db under the limit and not shown in test report.

Product	:	802.11 ac PCIe Module
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11n-20BW 14.4Mbps)(Dipole Antenna) (5300MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	$dB\mu V/m$	dB	dBµV/m
Horizontal					
Peak Detector:					
10600.000	14.550	35.740	50.289	-23.711	74.000
15900.000	*	*	*	*	74.000
21200.000	*	*	*	*	74.000
26500.000	*	*	*	*	74.000
Average					
<b>Detector:</b>					
*	*	*	*	*	*
Vertical					
Peak Detector:					
10600.000	14.881	41.580	56.461	-17.539	74.000

10600.000	14.881	41.580	56.461	-17.539	74.000
15900.000	*	*	*	*	74.000
21200.000	*	*	*	*	74.000
26500.000	*	*	*	*	74.000
Average					
<b>Detector:</b>					
10600.000	14.881	25.270	40.151	-13.849	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 + Correction Factor.
- 5. Correction Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data is under the limit of average detection.
- 7. The emission levels of other frequencies are greater then 10db under the limit and not shown in test report.

Product	:	802.11 ac PCIe Module
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11n-20BW 14.4Mbps)(Dipole Antenna) (5320MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	$dB\mu V/m$	dB	dBµV/m
Horizontal					
Peak Detector:					
10640.000	14.690	35.100	49.790	-24.210	74.000
15960.000	*	*	*	*	74.000
21280.000	*	*	*	*	74.000
26600.000	*	*	*	*	74.000
Average					
<b>Detector:</b>					
*	*	*	*	*	*
Vertical					
Peak Detector:					
10640.000	15.083	35.130	50.213	-23.787	74.000
15960.000	*	*	*	*	74.000

*	*	*	*	*	*
<b>Detector:</b>					
Average					
26600.000	*	*	*	*	74.000
21280.000	*	*	*	*	74.000
13700.000					, 11000

- 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 + Correction Factor.
- 5. Correction Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data is under the limit of average detection.
- 7. The emission levels of other frequencies are greater then 10db under the limit and not shown in test report.

74.000

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Product	:	802.11 ac PCIe Module
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11n-20BW 14.4Mbps)(Dipole Antenna) (5500MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	dBµV/m	dB	dBµV/m
Horizontal					
Peak Detector:					
11000.000	16.399	33.700	50.099	-23.901	74.000
16500.000	*	*	*	*	74.000
22000.000	*	*	*	*	74.000
27500.000	*	*	*	*	74.000
Average					
<b>Detector:</b>					
*	*	*	*	*	*
Vertical					
Peak Detector:					
11000.000	17.132	33.700	50.832	-23.168	74.000
16500.000	*	*	*	*	74.000
22000.000	*	*	*	*	74.000

Note	

27500.000

Average Detector:

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

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

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4. Measurement Level = Reading Level + Correction Factor.

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- 5. Correction Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data is under the limit of average detection.
- 7. The emission levels of other frequencies are greater then 10db under the limit and not shown in test report.

Product	:	802.11 ac PCIe Module
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 2: Transmit (802.11n-20BW 14.4Mbps)(Dipole Antenna) (5580MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBµV	$dB\mu V/m$	dB	dBµV/m
Horizontal					
Peak Detector:					
11160.000	16.664	39.470	56.135	-17.865	74.000
16800.000	*	*	*	*	74.000
22400.000	*	*	*	*	74.000
28000.000	*	*	*	*	74.000
Average Detector:					
11160.000	16.664	22.850	39.515	-14.485	54.000
Vertical					
Peak Detector:					
11160.000	17.643	43.970	61.613	-12.387	74.000
16800.000	*	*	*	*	74.000
22400.000	*	*	*	*	74.000
28000.000	*	*	*	*	74.000
Average Detector:					
11160.000	17.643	26.230	43.873	-10.127	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 + Correction Factor.
- 5. Correction Factor = Antenna factor + Cable loss Amplifier gain.
- 6. The average measurement was not performed when the peak measured data is under the limit of average detection.
- 7. The emission levels of other frequencies are greater then 10db under the limit and not shown in test report.