



TX CH06



TX CH09

Agilent Spectrum Analyzer - Swept SA				
₩ RF 50 Ω AC Center Freq 2.452000000 (PNO: East +++ Trig: F		ло 02 /g Type: Log-Pwr g Hold: 10/10	22:06 PM Jun 08, 2021 TRACE 2 3 4 5 6 TYPE M
Ref Offset 6.81 dB 10 dB/div Ref 20.00 dBm			Mkr1 2	.452 00 GHz 26.138 dBm
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0.00				
-10.0				
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-60.0				
-70.0 Whenter lunder on the market for			And the second s	walder a grand and a state of the
Center 2.45200 GHz			S	pan 60.00 MHz 26 s (1001 pts)
#Res BW 3.0 kHz	#VBW 10 kł		Sweep 6.3	26 s (1001 pts)





7. CHANNEL BANDWIDTH& 99% OCCUPY BANDWIDTH

Test Requirement:	FCC Part15 C Section 15.247 (a)(2)
Test Method:	KDB558074 D0115.247 Meas Guidancev05r02

7.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C					
Section	Test Item	Limit	Frequency Range (MHz)	Result	
15.247(a)(2)	Bandwidth	>= 500KHz (6dB bandwidth)	2400-2483.5	PASS	

7.2 TEST PROCEDURE

- 1. Set RBW = 100 kHz.
- 2. Set the video bandwidth (VBW) \ge 3 xRBW.
- 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.

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP



7.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.







Temperature :	26 ℃	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	DC 12V
Test Mode :	TX b Mode		

	× .

	-6dB Occupy Bandwidth (MHz)					
Test CH	802.11b	802.11g	802.11n(HT20)	802.11n(HT 40)	Limit(KHz)	Result
Lowest	8.224	16.290	15.020	35.060		
Middle	7.688	15.340	13.450	35.080	>500	Pass
Highest	7.770	15.150	16.090	35.070		



Test CI I	99% Occupy Bandwidth (MHz)				Result
Test CH	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)	Result
Lowest	12.567	16.350	17.543	35.790	
Middle	12.458	16.338	17.542	35.852	Pass
Highest	12.492	16.359	17.540	35.896	



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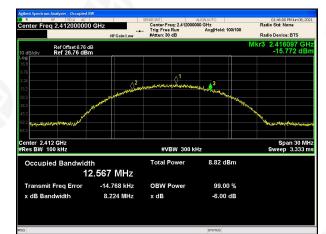


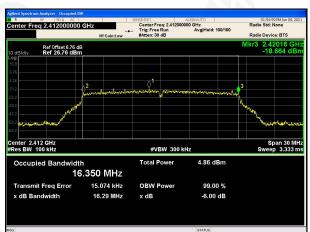
Test plot as follows:



802.11b



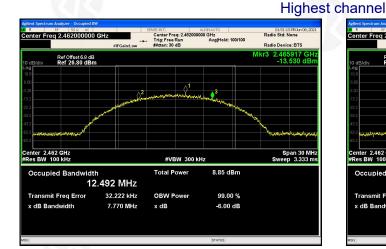




802.11g

Middle channel







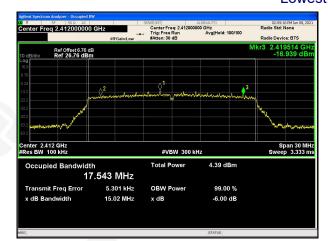
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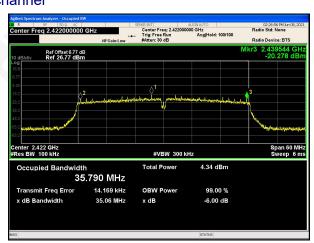




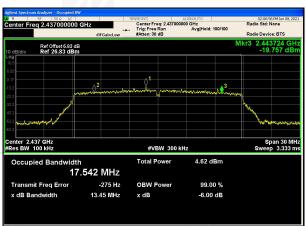




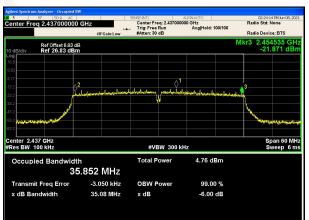




802.11n40



Middle channel





Highest channel

02:03:23 PM Jun 08, 202 Radio Std: None Center Freq: 2.462 Trig: Free Run ter Freq 2.462000000 G GHz AvalHold: 100/10 Radio Device: BTS Mkr3 2.470053 (-18.880 c Ref Offset 6.8 dB Ref 26.80 dBn er 2.462 GHz BW 100 kHz Span 30 MH Sweep 3.333 ms #VBW 300 kHz 6.13 dBm Total Powe Occupied Bandwidt 17.540 MHz 9.121 kHz Transmit Freq Error OBW Power 99.00 % 16.09 MHz x dB -6.00 dB x dB Bandw dth

.







8.PEAK OUTPUT POWER TEST

Test Requirement:	FCC Part15 C Section 15.247 (b)(3)	
Test Method:	KDB558074 D0115.247 Meas Guidancev05r02	

8.1 APPLIED PROCEDURES/LIMIT

FCC Part15 (15.247) , Subpart C					
Section Test Item Limit Frequency Range (MHz)		Result			
15.247(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS	

8.2 TEST PROCEDURE

a. The EUT was directly connected to the Power meter

8.3 DEVIATION FROM STANDARD

No deviation.

8.4 TEST SETUP



8.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.













8.6 TEST RESULT

Temperature :	26 ℃	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	DC 12V

	Test CH	Peak Output Power (dBm)				Limit(dPm) Docult		
4	Test CH	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)	Limit(dBm)	Result	
	Lowest	9.252	8.451	8.505	7.825			
	Middle	9.135	8.287	8.521	7.433	30.00	Pass	
	Highest	9.122	8.193	8.332	7.728			





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9. CONDUCTED BAND EDGE AND SPURIOUS EMISSION

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	KDB558074 D0115.247 Meas Guidancev05r02

9.1 APPLICABLE STANDARD

in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, In addition, radiated emissions which fall in the restricted bands, as defined in§15.205(a), must also comply with the radiated emission limits specified in15.209(a).

9.2 TEST PROCEDURE

Using the following spectrum analyzer setting:

- A) Set the RBW = 100KHz.
- B) Set the VBW = 300KHz.
- C) Sweep time = auto couple.
- D) Detector function = peak.
- E) Trace mode = max hold.
- F) Allow trace to fully stabilize.

9.3 DEVIATION FROM STANDARD

No deviation.

9.4 TEST SETUP

EUT	SPECTRUM
	ANALYZER

9.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

9.6 TEST RESULTS







Test mode:

2.31000 GH

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Test plot as follows:

Ref Offset 6.76 dB Ref 20.00 dBm

2.410 68 GHz 2.400 00 GHz 2.390 00 GHz



802.11b







Lowest channel

Highest channel





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Test mode:

Test mode:

802.11n(HT20)



Lowest channel



Highest channel

802.11n(HT40)













802.11b

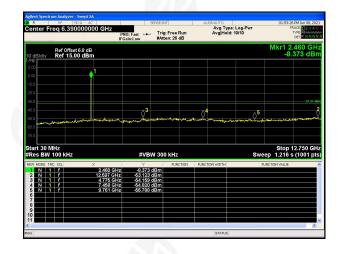
Lowest channel

	50 Q AC	SENSE:	INT	ALIGNAUTO		01:47:45 PM Jun 08, 20
enter Freq 6.	.390000000 GHz	PNO: Fast Tr IFGain:Low #A	ig: Free Run tten: 26 dB	Avg Type: Avg Hold:	Log-Pwr 10/10	TRACE 1 2 3 4 TYPE MINIMUM DET P N N N
Ref C dB/div Ref	offset 6.76 dB 15.00 dBm					Mkr1 2.409 GI -7.637 dB
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iii						
0 0						
0						
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0						
art 30 MHz	Hz	#VBW 30	0 kHz		Swee	Stop 12.750 G p 1.216 s (1001 p
es BW 100 k		Y	FUNCTION	FUNCTION WIDTH	FUN	CTION VALUE
es BW 100 k	х					
MODE TRC SCL N 1 f N 1 f	2.409 0 5.881 0	Hz -7.637 dBm				
N 1 F	2.409 0	Hz -7.637 dBm Hz -52.374 dBm Hz -55.370 dBm				
MODE TRC SCL N 1 f N 1 f	2.409 0 5.881 0 5.016 0	Hz -7.637 dBm Hz -52.374 dBm Hz -55.370 dBm Hz -53.984 dBm				
MODE TRC SCL N 1 f N 1 f	2.409 0 5.881 0 5.016 0 7.102 0	Hz -7.637 dBm Hz -52.374 dBm Hz -55.370 dBm Hz -53.984 dBm				
MODE TRC SCL N 1 f N 1 f	2.409 0 5.881 0 5.016 0 7.102 0	Hz -7.637 dBm Hz -52.374 dBm Hz -55.370 dBm Hz -53.984 dBm				
MODE TRC SCL N 1 f N 1 f	2.409 0 5.881 0 5.016 0 7.102 0	Hz -7.637 dBm Hz -52.374 dBm Hz -55.370 dBm Hz -53.984 dBm				

Middle channel

RF 50 9		SE	INSE:INT	A	Avg Type:	l og Pur	01:49:30 PM Jun 05 TRACE
ter Freq 6.39000	P	IO: Fast ↔↔ ain:Low	Trig: Free R #Atten: 26 di		Avg Hold: 1	0/10	TYPE MW
Ref Offset 6. B/div Ref 15.00	33 dB dBm						Mkr1 2.434 0 -6.008 d
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t 30 MHz s BW 100 kHz		#VBV	/ 300 kHz			Swee	Stop 12.750 p 1.216 s (1001
MODE TRC SCL	×	Y	FUNCT	ION FUNC	TION WIDTH	FUN	NCTION VALUE
N 1 f N 1 f	2.434 GHz 12.445 GHz	-6.008 d -52.769 d	Bm				
N 1 f	4.838 GHz 7.509 GHz	-55.014 d -55.077 d	Bm				
	9.786 GHz	-55.444 d	Bm				
N 1 f							
N 1 f							
N 1 f							
N 1 f							
			u				

Highest channel



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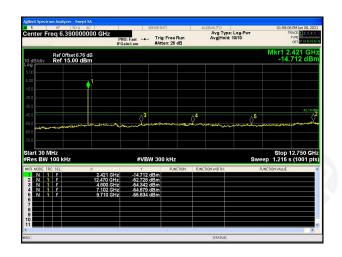




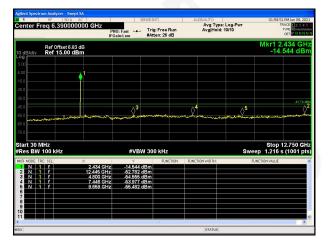
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Lowest channel



Middle channel



Highest channel

			NO: Fast +++	#Atten	ree Run		Avg Hold:	10/10		DET PINNN
		3	Sam:Low	Pricell	. 20 48				Mkr1 2 -15	2.460 GI 6.010 dB
		1								
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										-42.76
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MHz / 100	kHz		#VB\	N 300 H	Hz			Swe	Stop ep 1.216	12.750 G s (1001 p
TRC SCL		X	Y		FUNCTION	FUNCT	ION WIDTH	FI,	INCTION VALUE	
1 7		1.747 GHz	-50.654	dBm						
		4.762 GHz 7.509 GHz	-54.414	dBm dBm						
1 1		9.990 GHz	-56.211	dBm						
	MHz 1 10 1 1 1 1 1	Ref 15.00 dBi Image: Constraint of the second se	MHz 1 00 KHz 1 10 KHz 1 1 1 4762 GHz 1 1 4762 GHz 1 1 747 GHz 1 1 7509 GHZ 1 1 1 7509 GHZ 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Ref 15.00 dBm Image: Constraint of the state of th	Ref 15.00 dBm 1 <	Ref 15.00 dBm ↓ ↓ <td>Ref 15.00 dBm 1 1</td> <td>Ref 15.00 dBm Image: Colspan="2">Image: Colspan="2" Image: Colspan="2" Imag</td> <td>Ref 15.00 dBm 1<td>Ref 15.00 dBm -15 Image: Constraint of the second se</td></td>	Ref 15.00 dBm 1 1	Ref 15.00 dBm Image: Colspan="2">Image: Colspan="2" Image: Colspan="2" Imag	Ref 15.00 dBm 1 <td>Ref 15.00 dBm -15 Image: Constraint of the second se</td>	Ref 15.00 dBm -15 Image: Constraint of the second se





Lowest channel







Middle channel

Agilent Spectr										
OW R Center F	RF req 6.39	900000000 GHz	PNO: Fast IFGain:Low		g: Free Run ten: 26 dB	AL	Avg Type: Avg Hold: 1	Log-Pwr 0/10	T	BPM Jun 08, 2021 NACE 1 2 3 4 5 6 TYPE M WANNAGE DET P N N N N N
10 dB/div		et 6.83 dB .00 dBm							Mkr1 2. -15.	434 GHz 578 dBm
5.00		1								
-15.0										
-35.0 -45.0				∂ ³		04		۵ ⁵		-42.60 dBp
-55.0 -65.0 -75.0	adorganes.	مسيبهاسمين	- marine	in marine	ang	et na prince		~~~	hang tan di anti-	a for a second
Start 30 M #Res BW			;	≠VBW 30	0 kHz			Swe	Stop 1 ep 1.216 s	2.750 GHz (1001 pts)
MKR MODE TH		× 2.434		Ƴ .578 dBm	FUNCTION	FUNCT	ION WIDTH	R.	INCTION VALUE	^
2 N 3 N 5 N	f f f	12.546 4.800 7.458 9.850	GHz -53 GHz -54	.786 dBm .691 dBm .477 dBm .557 dBm						
7 8 9 10										
MSG					u		STATUS			>

Avg Type: Log-Pwr Avg|Hold: 10/10

> Stop 12.750 G Sweep 1.216 s (1001 p

/ 300 kH:

-52.341 dBm -54.621 dBm -54.870 dBm

2.403 GHz 12.445 GHz 4.787 GHz 7.115 GHz 9.519 GHz

Ref Offset 6.76 dB Ref 15.00 dBm

Highest channel

	Fre	q 6.3	900000	Р		ig: Free Run tten: 26 dB	Avg Ty Avg Hol	pe:Log-Pwr ld:10/10	TRACE 123 TYPE MUMA DET PNNT
0 dB/di	, 1	Ref Of	fset 6.8 dE 5.00 dBr	l m					Mkr1 2.460 G -11.768 dE
og 									
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5.0									
50									
5.0									
15.0			_∧2		3		*4	F	-40.49
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5.0	~~~~~	man	angled a start		and the other states and				
·6.0									
tart 30									
			z		#VBW 30	10 kHz		Swee	Stop 12.750 G p 1.216 s (1001 p
Res B		SCL		x	Y	FUNCTION	FUNCTION WIDTH	FU	NCTION VALUE
Res B	TRC								
	TRC 1	ţ		2.460 GHz	-11.768 dBm				
	TRC 1 1	1 1		1.747 GHz 4.749 GHz	-51.962 dBm -54.856 dBm				
	TRC 1 1 1	f f f f f f f		1.747 GHz	-51.962 dBm				
KR MODE 1 N 2 N 3 N 4 N 5 N 6	TRC 1 1 1	f f f f f		1.747 GHz 4.749 GHz 7.382 GHz	-51.962 dBm -54.856 dBm -53.983 dBm				
KR MODE 1 N 2 N 3 N 4 N 5 N 6 7 8		f f f f		1.747 GHz 4.749 GHz 7.382 GHz	-51.962 dBm -54.856 dBm -53.983 dBm				
KR MODE 1 N 2 N 3 N 4 N 5 N 6 7		f f f f		1.747 GHz 4.749 GHz 7.382 GHz	-51.962 dBm -54.856 dBm -53.983 dBm				





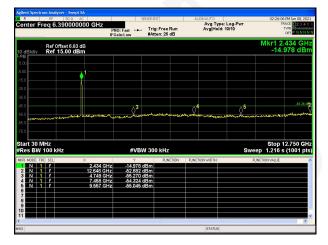
Lowest channel







Middle channel



Avg Type: Log-Pwr Avg|Hold: 10/10

> Stop 12.750 GF Sweep 1.216 s (1001 pt

Fast ---- Trig: Free Run n:Low #Atten: 26 dB

W 300 kH:

-15.676 dBm -52.506 dBm -55.403 dBm -54.581 dBm -55.278 dBm

2.407 GHz 4.775 GHz 7.369 GHz

Ref Offset 6.77 dB Ref 15.00 dBm

Highest channel

			RF	50 g AC				IT		ALI	GNAUTO				0 PM Jun 08, 20
Cent	ter	Fre	q 6.	3900000		PNO: Fast ↔ Gain:Low	. Trig #Att	: Free Ru en: 26 dE	ın B		Avg Type Avg Hold:	: Log-Pwr 10/10			TYPE NAMA DET PINNN
10 dE	B/div	,	Ref C Ref	ffset 6.81 dE 15.00 dBm	3										.447 GH 483 dB
-og 5.00															
500															
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25.0				A I											
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Stari #Res				Hz		#VE	W 30) kHz				s	weep	Stop 1.216	12.750 GH s (1001 pt
WD N		TRC	SCL	3	<	Ý		FUNCT	ION	FUNCT	ION WIDTH		FUNC	TION VALUE	
	ZZ	1	f f		2.447 GHz 12.597 GHz	-15.483	dBm								
1			1		4,775 GHz	-54.614	dBm								
1	Ň	_													
1 2 3 4	ZZZ	1	1		7.433 GHz 9.964 GHz	-53.826	dBm								
123456	NN	1	1		7.433 GHz 9.964 GHz	-53.826	dBm IdBm								
12345678	NN		1		7.433 GHz 9.964 GHz	-53.826 -56.413	dBm								
123456789	NN		1		7.433 GHz 9.964 GHz	-53.826 -56.413	dBm								
12345678	NN		f		7,433 GHz 9,964 GHz	-53.826 -56.413	dBm dBm								>





10. ANTENNA REQUIREMENT



FCC Part15 C Section 15.203 /247(c)

15.203 requirement:

Standard requirement:

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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(c) (1)(i) requirement:

(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

EUT Antenna:

The antenna is PCB Antenna, the best case gain of the antenna is 0dBi, reference to the appendix II for details







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11. TEST SETUP PHOTO

Reference to the appendix I for details.

12. EUT CONSTRUCTIONAL DETAILS

Reference to the appendix II for details.

***** END OF REPORT *****