





















# 8 Maximum Conducted Output Power

Test Requirement	:	FCC CFR47 Part 15 Section 15.247
Test Method	:	ANSI C63.10:2013
Test Limit	:	For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
		For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500- kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to- point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to- point operations exclude the use of point-to multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

# 8.1 Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01, The use Power Meter 1. Place the EUT on a bench and set it in transmitting mode. 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to a Power meter.



# 8.2 Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
		5180	10.69	≤23.98	PASS
		5220	11.85	≤23.98	PASS
11.0	Ant1	5240	12.76	≤23.98	PASS
IIA	Anti	5745	10.91	≤30.00	PASS
		5785	11.08	≤30.00	PASS
		5825	10.17	≤30.00	PASS
		5180	9.55	≤23.98	PASS
		5220	11.19	≤23.98	PASS
1111205150	Apt1	5240	11.21	≤23.98	PASS
1111203130	Anti	5745	9.63	≤30.00	PASS
		5785	9.84	≤30.00	PASS
		5825	9.12	≤30.00	PASS
11N40SISO		5190	9.68	≤23.98	PASS
	Apt1	5230	10.94	≤23.98	PASS
	Anti	5755	9.58	≤30.00	PASS
		5795	9.63	≤30.00	PASS
		5180	8.01	≤23.98	PASS
		5220	9.11	≤23.98	PASS
110000000	Apt1	5240	9.87	≤23.98	PASS
TIAC203130	Anti	5745	8.66	≤30.00	PASS
		5785	8.48	≤30.00	PASS
		5825	8.00	≤30.00	PASS
11AC40SISO		5190	6.77	≤23.98	PASS
	Ant1	5230	7.64	≤23.98	PASS
		5755	6.85	≤30.00	PASS
		5795	6.81	≤30.00	PASS
1140808180	Ant1	5210	6.65	≤23.98	PASS
11AC805150	AIILI	5775	6.75	≤30.00	PASS

Note. The Duty Cycle Factor is included in the test graphs parameter Settings.



#### **Test Graphs:**













Agilent Spectrum Analyzer - Channel Power	SENSE:INT	10:54:22 PM Aug 23, 2022	
Center Freq 5.180080000 G	Hz Center Freq: 5.180080000 GHz F Trig: Free Run Avg Hold: 300/300	Radio Std: None	Frequency
#1	FGain:Low #Atten: 40 dB F	Radio Device: BTS	
Ref Offset 16.22 dB			
			Contor From
10.0			5.180080000 GHz
0.00			
-10.0			
-30.0			
-40.0			
-50.0			
-600			
Center 5.18 GHz #Res BW 1 MHz	#VBW 3 MHz	Span 40 MHz Sweep 1 ms	CF Step
			4.000000 MHz Auto Man
Channel Power	Power Spectral Densit	ty	
9 55 dBm (	21 12 MHz -63 70 dBm /	/⊔	Freq Offset
5.55 dBm /		112	UHZ
MSG	STATUS		
	11N20SISO_Ant1_5220		
Agilent Spectrum Analyzer - Channel Power (XI RL RF 50 Ω AC	SENSE:INT ALIGN AUTO/NO RE	11:05:07 PM Aug 23, 2022	Frequency
Center Freq 5.220180000 G	Hz Center Freq: 5.220180000 GHz F Trig: Free Run Avg Hold: 300/300	Radio Std: None	Frequency
#1	FGain:Low #Atten: 40 dB F	Radio Device: BTS	
Ref Offset 16.67 dB 10 dB/div Ref 30.00 dBm			
20.0			Center Freq
10.0			5.220180000 GHz
0.00			
-20.0			
-30.0			
-40.0			
-60.0			
		0	
#Res BW 1 MHz	#VBW 3 MHz	Sweep 1 ms	CF Step
			Auto Man
Channel Power	Power Spectral Densit	y	-
11.19 dBm / :	21.08 MHz -62.05 dBm	/Hz	Freq Offset 0 Hz
Meg .	STATIS		
	11N208180 Apt1 5240		











Agilent Spectrum Analyzer - Channel Power	SENSE:INT ALIGN AUTO/NOR	F 11:30:53 PM Aug 23, 2022	Frequency
#IFGain:Low	Trig: Free Run Avg Hold: 300/300 #Atten: 40 dB	Radio Device: BTS	
Ref Offset 16.79 dB			
			Center Freq
10.0			5.192040000 GHz
-10.0			
-20.0			
-40.0			
-60.0			
Center 5.192 GHz	#\/D\\/	Span 80 MHz	CF Step
		Sweep This	8.000000 MHz <u>Auto</u> Man
Channel Power	ver Channel News 192040000 GHz #FGaincow Redia Stat. None Radio Stat. None State State State State State State State State State Radio Stat. None Radio Stat. N		Ener Offert
9.68 dBm / 42.8 мн	z -66.63 dBm	/Hz	0 Hz
MSG	STATUS	5	
11	N40SISO_Ant1_5230	)	
Agilent Spectrum Analyzer - Channel Power	SENSE:INT ALIGN AUTO/NOR	F 11:54:33 PM Aug 23, 2022	Frequency
Center Freq 5.230160000 GHz	Center Freq: 5.230160000 GHz Trig: Free Run Avg Hold: 300/300 #Atten: 40 dB	Radio Std: None Radio Device: BTS	riequency
Ref Offset 17.08 dB			
10 dB/div Ref 30.00 dBm Log			Cepter Fred
10.0			5.230160000 GHz
10.0			
-20.0			
+40.0		التست تتتقد	
-50.0 -60.0			
Center 5.23 GHz	#\/B\M_2.04Uz	Span 80 MHz	CF Step
	#VBW JIMA2	Sweep This	8.000000 MHz <u>Auto</u> Man
Channel Power	Power Spectral Dens	ity	FreqOffset
10.94 dBm / зэ.2 мн	z -64.99 dBm	/Hz	0 Hz
MSG	STATUS		
11	N40SISO Ant1 5755	5	



Anti-A Construct Andreas - Channel D				
Aglent Spectrum Analyzer - Channel H 101 RL PF 500 AC Center Freq 5.75512000	O GHZ #IFGain:Low	EINT ALIGN AUTO/NO q: 5.755120000 GHz Run Avg Hold: 300/300 IB	RF 12:03:25 AM Aug 24, 2022 Radio Std: None Radio Device: BTS	Frequency
10 dB/div Ref Offset 15.69 Log	) dB m			
				Center Freq 5.755120000 GHz
-10.0				
-30.0				
			Spap 20 MHz	
#Res BW 1 MHz	#VBV	V 3 MHz	Sweep 1 ms	CF Step 8.000000 MHz <u>Auto</u> Man
Channel Power 9 58 dBm	/ 39.76 MH7	ower Spectral Den	sity	Freq Offset
	, 00.70 MHZ		,,,,2	0112
MSG		STATL	JS	
	11N40SI	SO_Ant1_579	5	
Aglent Spectrum Analyzer - Channel 101 RL RF 1900 AC Center Freq 5.79512000	0 GHz Center Fre #IFGain:Low #Atten: 40 of	EIINT ALIGN AUTO/NO q: 5.795120000 GHz Run Avg Hold: 300/300 IB	RF 12:07:23 AM Aug 24, 2022 Radio Std: None Radio Device: BTS	Frequency
10 dB/div Ref Offset 16.1 ( Ref 30.00 dB	dB m			
				Center Freq 5.795120000 GHz
-10.0				
-30.0 -40.0 -50.0				
60.0 Center 5.795 GHz			Span 80 MHz	OF Stop
#Res BW 1 MHz	#VBV	V 3 MHz	Sweep 1 ms	8.000000 MHz Auto Man
Channel Power		Power Spectral Den	sity	Freq Offset
9.63 dBm	/ 39.76 MHz	-66.37 dBm	I /Hz	0 Hz
MSG		STATU	US	
	11AC20S	ISO Ant1 518	30	















Adiant Sportrum	Applutor Chappel Dewer				
Center Fred	Analyzer = Chainter Power RF 50 Ω AC 1 5.190160000 GHz #IFGain:Low	SENSE:INT Center Freq: 5.190160000 Trig: Free Run Av #Atten: 40 dB	ALIGN AUTO/NOR GHz g Hold: 300/300	F 12:33:53 AM Aug 24, 2022 Radio Std: None Radio Device: BTS	Frequency
10 dB/div	Ref Offset 17.44 dB Ref 30.00 dBm				
20.0 10.0					Center Freq 5.190160000 GHz
-10.0					
-30 0					
-60.0 -60.0					
Center 5.19 #Res BW 1	GHz MHz	#VBW 3 MHz		Span 80 MHz Sweep 1 ms	CF Step 8.000000 MHz Auto Man
Channe	l Power	Power Sp	ectral Dens	sity	Freq Offset
6	5.77 dBm / 40.16 MH	Iz -69	.27 dBm	/Hz	0 Hz
MSG			STATUS	S	
	11A	C40SISO A	nt1 523	0	
Aglent Spectrum 2: RL Center Fred	Analyzer - Channel Power RF 50Ω AC 1 5.230080000 GHz #IFGain:Low	SENSE:INT Center Freq: 5.230080000 Trig: Free Run Av #Atten: 40 dB	ALIGN AUTO/NOR GHz gjHold: 300/300	F 12:36:26 AM Aug 24, 2022 Radio Std: None Radio Device: BTS	Frequency
10 dB/div Log	Ref Offset 17.38 dB Ref 30.00 dBm				
20.0					Center Freq 5.230080000 GHz
-10.0					
-30.0					
-60.0 -60.0					
Center 5.23 #Res BW 1	GHZ MHZ	#VBW 3 MHz		Span 80 MHz Sweep 1 ms	CF Step 8.000000 MHz <u>Auto</u> Man
Channe	l Power	Power Sp	ectral Dens	sity	FreqOffset
	.64 dBm / 40 MHz	-68	.38 dBm	/Hz	0 Hz
MSG			STATUS	s	
	11A	C40SISO A	nt1 575	5	



Aglient Spectrum Analyzer - Channel Power 24 RL RF S02 AC Center Freq 5.7550000000 GHz #IFGain:Low	SENSE:INT ALIGN AUTO/NOF Center Freq: 5.755000000 GHz Trig: Free Run Avg Hold: 300/300 #Atten: 40 dB	RF 12:40:18 AM Aug 24, 2022 Radio Std: None Radio Device: BTS	Frequency
Ref Offset 15.83 dB 10 dB/div Ref 30.00 dBm			
20.0			Center Freq 5.755000000 GHz
10.0			
-30.0			
60.0			
Center 5.755 GHz #Res BW 1 MHz	#VBW 3 MHz	Span 80 MHz Sweep 1 ms	CF Step 8.000000 MHz Auto Map
Channel Power	Power Spectral Dens	sity	Freq Offset
6.85 dBm / 40 мнz	-69.17 dBm	/Hz	0 Hz
MSG	STATU	IS	
 11A	AC40SISO Ant1 579	)5	
Agilent Spectrum Analyzer - Channel Power			
Center Freq 5.795040000 GHz #IFGain:Low	Center Freq: 5.795040000 GHz Trig: Free Run Avg Hold: 300/300 #Atten: 40 dB	Radio Std: None Radio Device: BTS	Frequency
Ref Offset 16.24 dB 10 dB/div Ref 30.00 dBm Log			
20.0			Center Freq 5.795040000 GHz
-10.0			
40.0	<u> </u>		
60.0			
Center 5.795 GHz #Res BW 1 MHz	#VBW 3 MHz	Span 80 MHz Sweep 1 ms	CF Step 8.000000 MHz
Channel Power	Power Spectral Dens	sity	Free Offset
6.81 dBm / 40.08 MI	Hz -69.22 dBm	/Hz	0 Hz
MSG	STATU	S	
	C80SISO Ant1 521	0	



Agilent Spectrum Analyzer - Channel Power Of RL RF 50 Ω AC Center Freq 5.210560000 GHz	SENSE:INT ALIGN AUTO/NO RF 02:32:25 AM Aug 24, 2022 r Freq: 5.210560000 GHz Radio Std: None ree Run AvglHold: 300/300	Frequency	
#IFGain:Low #Atter Ref Offset 17.33 dB 10 dB/div Ref 30.00 dBm	: 40 dB Radio Device: BTS		
20.0 10.0		Center Freq 5.210560000 GHz	
-10.0	V		
-200			
-50.0			
Center 5.211 GHz #Res BW 1 MHz #	Span 160 MHz VBW 3 MHz Sweep 1 ms	CF Step 16.000000 MHz	
Channel Power	Power Spectral Density	Freg Offset	
6.65 dBm / 81.12 MHz	-72.44 dBm /нz	0 Hz	
MSG			
 11AC80	DSISU_Ant1_5775		
Agilent Spectrum Analyzer - Channel Power	SENSE:INT ALIGN AUTO/NO RF 02:37:34 AM Aug 24, 2022		
Center Freq 5.775240000 GHz #IFGain:Low #IFGain:Low	r Freq: 5.775240000 GHz Radio Std: None ree Run Avg Hold: 300/300 ; 40 dB Radio Device: BTS	Frequency	
Ref Offset 16.36 dB 10 dB/div Ref 30.00 dBm			
20.0		Center Freq 5.775240000 GHz	
10.0 -20.0			
-30.0			
-60.0			
Center 5.775 GHz #Res BW 1 MHz #	VBW 3 MHz Sweep 1 ms	CF Step 16.000000 MHz Auto Man	
Channel Power	Power Spectral Density		
6.75 dBm / 80.48 MHz	-72.31 dBm /Hz	Freq Offset 0 Hz	
ueo			
800	STATUS		



# 9 Power Spectral density

Test Requirement	:	FCC CFR47 Part 15 Section 15.2407(a)
Test Method	:	ANSI C63.10:2013
Test Limit	:	For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall be reduced by the amount in dB that the direction shall not exceed 30 dBm in any 500-kHzband. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-tomultipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations
		used exclusively for fixed, point-to-point operations



# 9.1 Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01 and ANSI 63.10: 2013 Sec 10.3.7.For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in Section 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, "provided that the measured power is integrated over the full reference bandwidth" to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 kHz bandwidth, the following adjustments to the procedures apply:

- a) Set the RBW to 1 MHz.
- b) Set the VBW to be at least 1 MHz (a VBW of 3 MHz is desirable).
- c) Set the frequency span to examine the spectrum across a convenient frequency segment (e.g., 600 MHz).
- d) Select the power averaging (rms) detector.
- e) Set the sweep time so that there is no more than a 1 ms integration period over each measurement bin.

f) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.



# 9.2 Test Result

Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations / data rates and antenna ports. Following channel was selected for the final test as listed below

TestMode	Antenna	Frequency[MHz]	Result [dBm/MHz]	Limit[dBm/MHz]	Verdict
		5180	1.31	≤11.00	PASS
		5220	2.13	≤11.00	PASS
11.0	A n+1	5240	2.89	≤11.00	PASS
	Anti	5745	-1.02	≤30.00	PASS
		5785	-0.91	≤30.00	PASS
		5825	-2.26	≤30.00	PASS
		5180	-0.76	≤11.00	PASS
		5220	0.83	≤11.00	PASS
1111200100	A n+1	5240	0.99	≤11.00	PASS
1111205150	Anti	5745	-2.97	≤30.00	PASS
		5785	-2.65	≤30.00	PASS
		5825	-3.96	≤30.00	PASS
	Ant1	5190	-3.18	≤11.00	PASS
1111400100		5230	-2.33	≤11.00	PASS
1111405150		5755	-5.8	≤30.00	PASS
		5795	-6.34	≤30.00	PASS
		5180	-2.4	≤11.00	PASS
		5220	-0.69	≤11.00	PASS
110000000	A n+1	5240	-0.24	≤11.00	PASS
TIAC203130	Anti	5745	-3.88	≤30.00	PASS
		5785	-4.12	≤30.00	PASS
		5825	-4.68	≤30.00	PASS
		5190	-6.42	≤11.00	PASS
1100400100	Ant1	5230	-5.46	≤11.00	PASS
1140403130	AIIU	5755	-9	≤30.00	PASS
		5795	-8.53	≤30.00	PASS
110,000,000	Ant1	5210	-8.9	≤11.00	PASS
TACOUSISU	AIILI	5775	-11.81	≤30.00	PASS

Note: 1.The Result and Limit Unit is dBm/500 kHz in the band 5.725–5.85 GHz.

2. The Duty Cycle Factor is included in the test graphs parameter Settings.



# Test Graphs:













