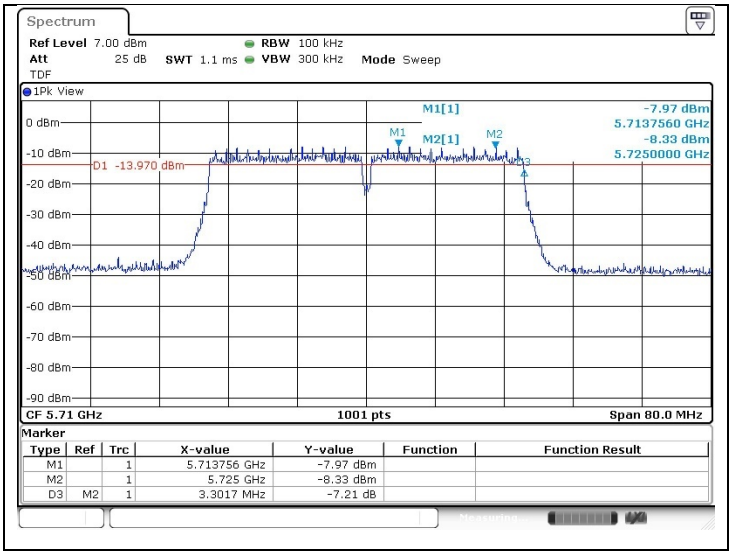
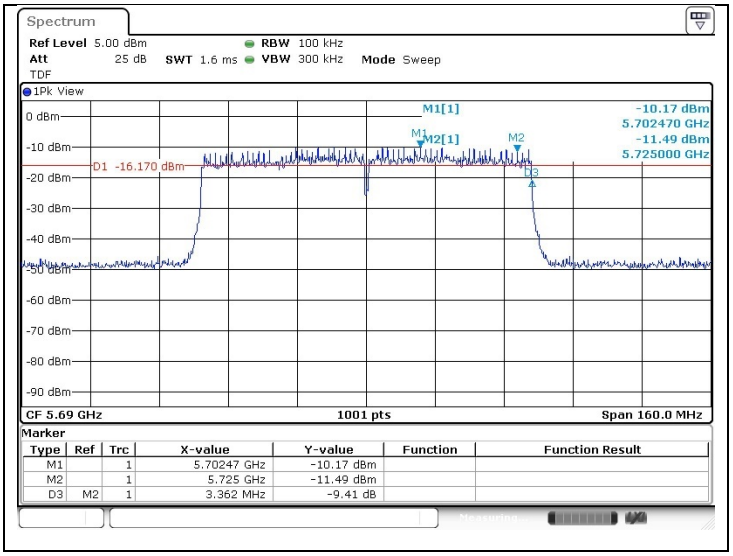
802.11n_HT40 (Band 3)

High Channel
(5 710 ㎒)



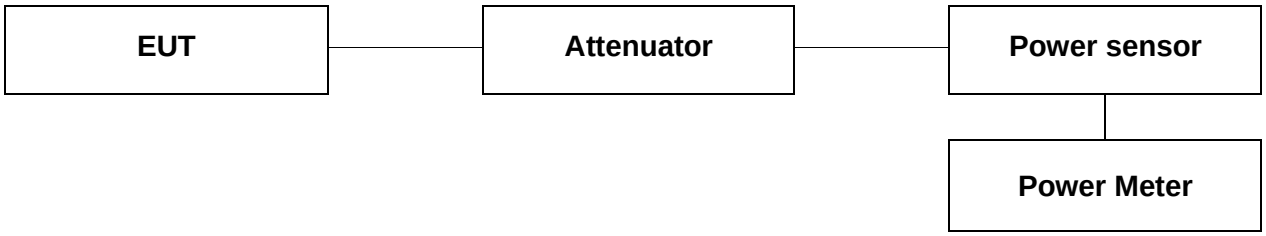
802.11ac_VHT80 (Band 3)

Middle Channel
(5 690 ㎒)



5. Maximum Conducted Output Power

5.1. Test Setup



5.2. Limit

According to 15.407(a)(1)(iv)
For client devices in the 5.15-5.25 ㎓ band, the maximum conducted output power over the frequency band of operation shall not exceed 250 ㎽ provided the maximum antenna gain does not exceed 6 ㏈i. In addition, the maximum power spectral density shall not exceed 11 ㏈ m in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 ㏈i are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in ㏈ that the directional gain of the antenna exceeds 6 ㏈i.

According to 15.407(a)(2)
For the 5.25-5.35 ㎓ and 5.47-5.725 ㎓ bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 ㎽ or 11 ㏈m + 10 log B, where B is the 26 ㏈ emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 ㏈m in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 ㏈i are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in ㏈ that the directional gain of the antenna exceeds 6 ㏈i.

According to 15.407(a)(3)
For the band 5.725-5.85 ㎓, 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 ㏈m in any 500-㎑ band. If transmitting antennas of directional gain greater than 6 ㏈i are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in ㏈ that the directional gain of the antenna exceeds 6 ㏈i. However, fixed point-to point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 ㏈i 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.

5.3. Test Procedure

1. This measurement settings are specified in section Ⅱ.E.3.a of KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
2. Measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the conditions listed below are satisfied:
   - The EUT is configured to transmit continuously or to transmit with a consistent duty cycle.
   - At all times when the EUT is transmitting, it must be transmitting at its maximum power control level.
   - The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.
3. If the transmitter does not transmit continuously, measure the duty cycle, x, of the transmitter output signal as described in section II.B.
4. Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
5. Adjust the measurement in dBm by adding 10 log (1/x) where x is the duty cycle (e.g., 10 log (1/0.25) if the duty cycle is 25 %).
6. In case of band crossing channels 138, 142 and 144, the measurement is complied with section Ⅲ.A of KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

5.4. Test Result

Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 % R.H.

Test mode: 11a

Band	Frequency (㎒)	Data Rate (Mbps)	Average Power (㏈m)	Duty Cycle Correction Factor (㏈)	Average Power Result (㏈m)
U-NII 1	5 180	48	3.88	4.03	7.91
	5 220		3.74		7.77
	5 240		3.68		7.71
U-NII 2A	5 260		4.33		8.36
	5 300		3.94		7.97
	5 320		4.10		8.13
U-NII 2C	5 500		4.92		8.95
	5 600		4.10		8.13
	5 700		3.83		7.86
U-NII 3	5 745		4.30		8.33
	5 785		4.46		8.49
	5 825		4.76		8.79

Band	Limit					
	Frequency (㎒)	Fixed Limit (㏈m)	26 ㏈ BW (㎒)	11+10LogB (㏈m)	Antenna Gain (㏈i)	Limit (㏈m)
U-NII 1	5 180	23.98			1.5	23.98
	5 220					
	5 240					
U-NII 2A	5 260		20.899	24.20	1.5	
	5 300		20.899	24.20		
	5 320		20.939	24.21		
U-NII 2C	5 500		20.779	24.18	-5.87	
	5 600		20.659	24.15		
	5 700		20.859	24.19		
U-NII 3	5 745	30			-2.16	30
	5 785					
	5 825					

Remark;

1. Average Power Result (㏈m) = Average Power (㏈m) + Duty Cycle Correction Factor (㏈)

Test mode: 11ac_VHT20

Band	Frequency (㎒)	Data Rate (Mbps)	Average Power (㏈m)	Duty Cycle Correction Factor (㏈)	Average Power Result (㏈m)
U-NII 1	5 180	MCS5	3.69	3.92	7.61
	5 220		3.96		7.88
	5 240		3.95		7.87
U-NII 2A	5 260		4.21		8.13
	5 300		3.96		7.88
	5 320		4.23		8.15
U-NII 2C	5 500		5.00		8.92
	5 600		4.05		7.97
	5 700		3.83		7.75
U-NII 3	5 745		4.18		8.10
	5 785		4.75		8.67
	5 825		4.86		8.78

Band	Limit					
	Frequency (㎒)	Fixed Limit (㏈m)	26 ㏈ BW (㎒)	11+10LogB (㏈m)	Antenna Gain (㏈i)	Limit (㏈m)
U-NII 1	5 180	23.98			1.5	23.98
	5 220					
	5 240					
U-NII 2A	5 260		21.299	24.28	1.5	
	5 300		21.179	24.26		
	5 320		21.219	24.27		
U-NII 2C	5 500		21.339	24.29	-5.87	
	5 600		20.979	24.22		
	5 700		21.139	24.25		
U-NII 3	5 745	30			-2.16	30
	5 785					
	5 825					

Remark;

1. Average Power Result (㏈m) = Average Power (㏈m) + Duty Cycle Correction Factor (㏈)

Test mode: 11n_HT40

Band	Frequency (㎒)	Data Rate (Mbps)	Average Power (㏈m)	Duty Cycle Correction Factor (㏈)	Average Power Result (㏈m)
U-NII 1	5 190	MCS6	3.01	4.89	7.90
	5 230		2.86		7.75
U-NII 2A	5 270		4.11		9.00
	5 310		3.91		8.80
U-NII 2C	5 510		4.69		9.58
	5 590		3.97		8.86
	5 670		3.43		8.32
U-NII 3	5 755		4.27		9.16
	5 795		4.49		9.38

Band	Limit					
	Frequency (㎒)	Fixed Limit (㏈m)	26 ㏈ BW (㎒)	11+10LogB (㏈m)	Antenna Gain (㏈i)	Limit (㏈m)
U-NII 1	5 190	23.98			1.5	23.98
	5 230					
U-NII 2A	5 270		40.360	27.06	1.5	
	5 310		40.200	27.04		
U-NII 2C	5 510		40.360	27.06	-5.87	
	5 590		39.750	29.99		
	5 670		40.200	27.04		
U-NII 3	5 755	30			-2.16	30
	5 795					

Remark;

1. Average Power Result (㏈m) = Average Power (㏈m) + Duty Cycle Correction Factor (㏈)

Test mode: 11ac_VHT80

Band	Frequency (㎒)	Data Rate (Mbps)	Average Power (㏈m)	Duty Cycle Correction Factor (㏈)	Average Power Result (㏈m)
U-NII 1	5 210	MCS6	0.98	6.99	7.97
U-NII 2A	5 290		0.92		7.91
U-NII 2C	5 530		1.52		8.51
	5 610		1.07		8.06
U-NII 3	5 775		1.30		8.29

Band	Limit					
	Frequency (㎒)	Fixed Limit (㏈m)	26 ㏈ BW (㎒)	11+10LogB (㏈m)	Antenna Gain (㏈i)	Limit (㏈m)
U-NII 1	5 210	23.98			1.5	23.98
U-NII 2A	5 290		81.838	30.13	1.5	
U-NII 2C	5 530		81.439	30.11	-5.87	
	5 610		82.200	30.15		
U-NII 3	5 775	30			-2.16	30

Remark;

1. Average Power Result (㏈m) = Average Power (㏈m) + Duty Cycle Correction Factor (㏈)

- Band-crossing channels

Mode	Band	Frequency (㎒)	Data Rate (Mbps)	Average Power (㏈m)	Duty Cycle Correction Factor (㏈)	Average Power Result (㏈m)
11a	U-NII 2C	5 720	48	2.50	4.03	6.53
	U-NII 3			-3.94		0.09
11ac_VHT20	U-NII 2C	5 720	MCS5	2.22	3.92	6.14
	U-NII 3			-3.36		0.56
11n_HT40	U-NII 2C	5 710	MCS6	2.89	4.89	7.78
	U-NII 3			-7.92		-3.03
11ac_VHT80	U-NII 2C	5 690	MCS6	0.13	6.99	7.12
	U-NII 3			-13.39		-6.40

Mode	Band	Limit					
		Frequency (㎒)	Fixed Limit (㏈m)	26 ㏈ BW (㎒)	11+10LogB (㏈m)	Antenna Gain (㏈i)	Limit (㏈m)
11a	U-NII 2C	5 720	23.98	15.390	22.87	-5.87	22.87
	U-NII 3		30			-2.16	30
11ac_VHT20	U-NII 2C	5 720	23.98	15.589	22.93	-5.87	22.93
	U-NII 3		30			-2.16	30
11n_HT40	U-NII 2C	5 710	23.98	34.980	26.44	-5.87	23.98
	U-NII 3		30			-2.16	30
11ac_VHT80	U-NII 2C	5 690	23.98	76.239	29.82	-5.87	23.98
	U-NII 3		30			-2.16	30

Remark;

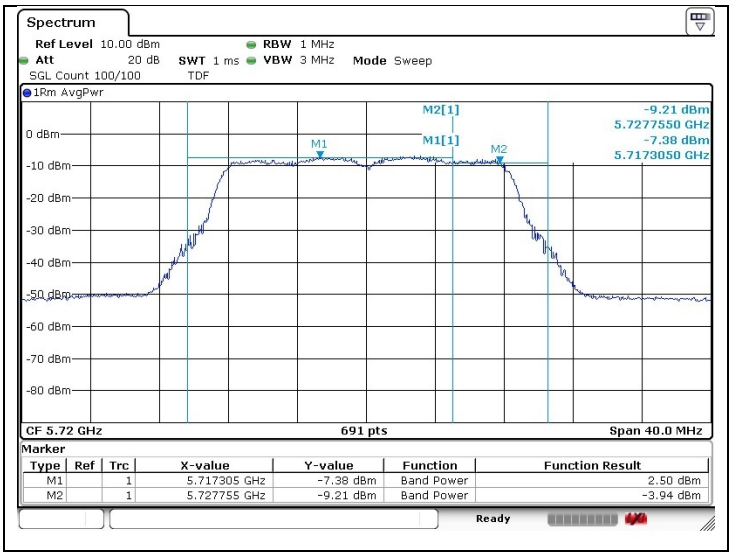
1. Average Power Result (㏈m) = Average Power (㏈m) + Duty Cycle Correction Factor (㏈)

- Test plots

Band-crossing channels

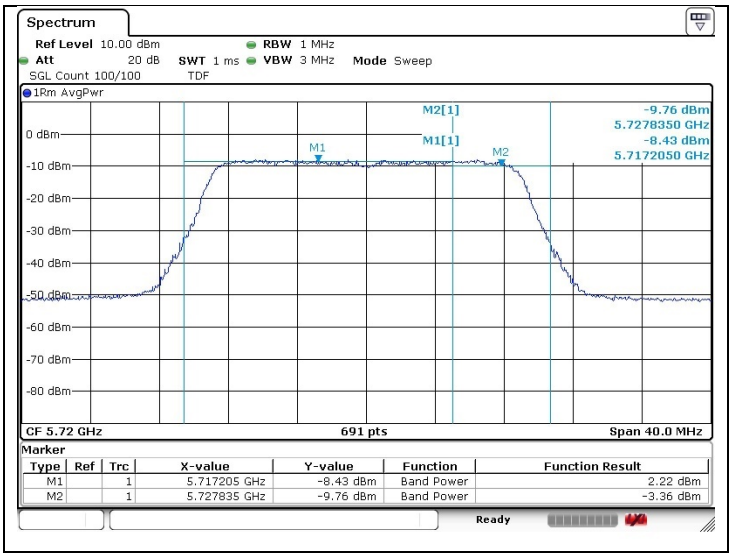
802.11a (Band 2C&3)

High Channel
(5 720 ㎒)



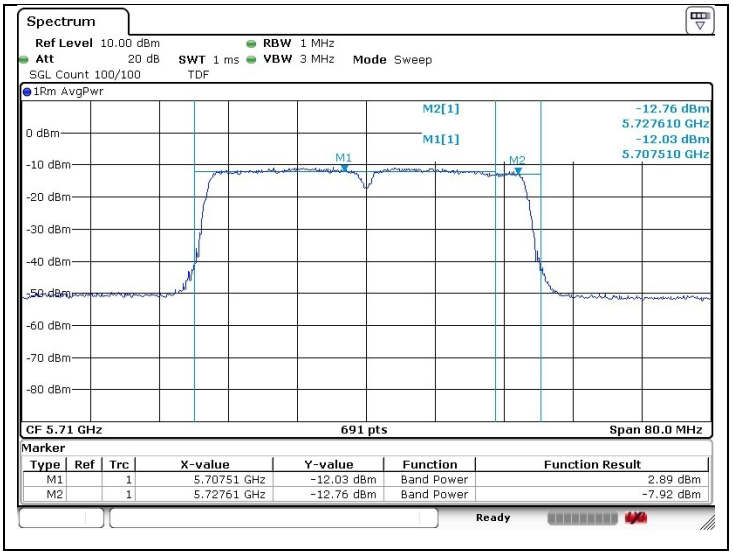
802.11ac_VHT20 (Band 2C&3)

High Channel
(5 720 ㎒)



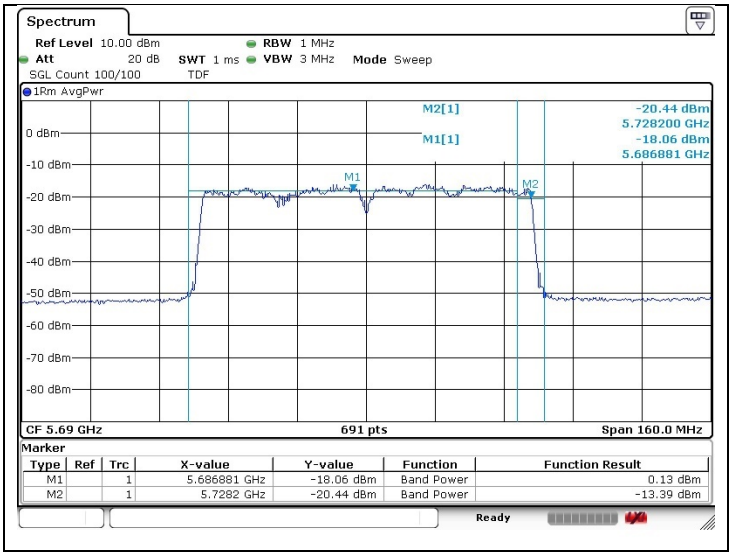
802.11n_HT40 (Band 2C&3)

High Channel
(5 710 ㎒)



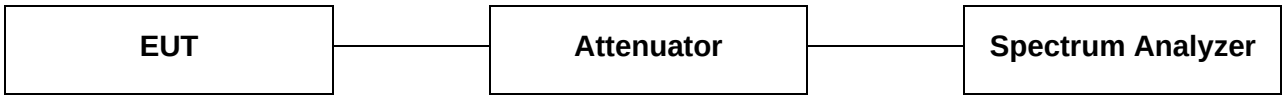
802.11ac_VHT80 (Band 2C&3)

Middle Channel
(5 690 ㎒)



6. Peak Power Spectral Density

6.1. Test Setup



6.2. Limit

According to 15.407(a)(1)(iv)
For client devices in the 5.15-5.25 ㎓ band, the maximum conducted output power over the frequency band of operation shall not exceed 250 ㎽ provided the maximum antenna gain does not exceed 6 ㏈i. In addition, the maximum power spectral density shall not exceed 11 ㏈m in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 ㏈i are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in ㏈ that the directional gain of the antenna exceeds 6 ㏈i.

According to 15.407(a)(2)
For the 5.25-5.35 ㎓ and 5.47-5.725 ㎓ bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 ㎽ or 11 ㏈m + 10 log B, where B is the 26 ㏈ emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 ㏈m in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 ㏈i are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in ㏈ that the directional gain of the antenna exceeds 6 ㏈i.

According to 15.407(a)(3)
For the band 5.725-5.85 ㎓, 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 ㏈m in any 500-㎑ band. If transmitting antennas of directional gain greater than 6 ㏈i are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in ㏈ that the directional gain of the antenna exceeds 6 ㏈i. However, fixed point-to point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 ㏈i 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.

6.3. Test Procedure

1. This measurement settings are specified in section Ⅱ.F of KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

2. Create an average power spectrum for the EUT operating mode being tested by following the instructions in section II.E.2. for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, “Compute power…”. (This procedure is required even if the maximum conducted output power measurement was performed using a power meter, method PM.)

3. Use the peak search function on the instrument to find the peak of the spectrum and record its value.

4. Make the following adjustments to the peak value of the spectrum, if applicable:

   a) **If Method SA-2 or SA-2 Alternative was used, add 10 log(1/x), where x is the duty cycle, to the peak of the spectrum.**
   b) If Method SA-3 Alternative was used and the linear mode was used in step II.E.2.g)(viii), add 1 ㏈ to the final result to compensate for the difference between linear averaging and power averaging.

5. The result is the Maximum PSD over 1 ㎒ reference bandwidth.

6. For devices operating in the bands 5.15-5.25 ㎓, 5.25-5.35 ㎓, and 5.47-5.725 ㎓, the above procedures make use of 1 ㎒ RBW to satisfy directly the 1 ㎒ reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 ㎓, the rules specify a measurement bandwidth of 500 ㎑. Many spectrum analyzers do not have 500 ㎑ RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 ㎒, or 500 ㎑, “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 ㎒, or 500 ㎑). If measurements are performed using a reduced resolution bandwidth (< 1 ㎒, or < 500 ㎑) and integrated over 1 ㎒, or 500 ㎑ bandwidth, the following adjustments to the procedures apply:

   a) Set RBW ≥ 1/*T*, where *T* is defined in section II.B.1.a).
   b) Set VBW ≥ 3 RBW.
   c) If measurement bandwidth of Maximum PSD is specified in 500 ㎑, add 10 log(500 ㎑/RBW) to the measured result, whereas RBW (< 500 ㎑) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
   d) If measurement bandwidth of Maximum PSD is specified in 1 ㎒, add 10 log(1 ㎒/RBW) to the measured result, whereas RBW (< 1 ㎒) is the reduced resolution bandwidth of spectrum analyzer set during measurement.
   e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

7. In case of band crossing channels 138, 142 and 144, the measurement is complied with section Ⅲ.A of KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

6.4. Test Result

Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 % R.H.

Test mode: 11a

Band	Frequency (㎒)	Ch.	Data Rate (Mbps)	Measured PPSD (㏈ m)	Duty Cycle Correction Factor (㏈)	Final PPSD (㏈ m)	Limit (㏈ m/1 ㎒)
U-NII 1	5 180	36	48	-5.58	4.03	-1.55	11
	5 220	44		-5.69		-1.66	
	5 240	48		-5.74		-1.71	
U-NII 2A	5 260	52		-6.17		-2.14	
	5 300	60		-5.91		-1.88	
	5 320	64		-6.22		-2.19	
U-NII 2C	5 500	100		-4.80		-0.77	
	5 600	120		-6.92		-2.89	
	5 700	140		-6.57		-2.54	
Band	**Frequency (㎒)**	**Ch.**	**Data Rate (Mbps)**	**Measured PPSD (㏈ m)**	**Duty Cycle Correction Factor (㏈)**	**Final PPSD (㏈ m)**	**Limit (㏈ m/500 ㎑)**
U-NII 3	5 745	149	48	-9.50	4.03	-5.47	30
	5 785	157		-8.60		-4.57	
	5 825	165		-8.82		-4.79	

Remark;

1. Final PPSD (㏈ m) = Measured PPSD (㏈ m) + Duty Cycle Correction Factor (㏈)

Test mode: 11ac_VHT20

Band	Frequency (㎒)	Ch.	Data Rate (Mbps)	Measured PPSD (㏈ m)	Duty Cycle Correction Factor (㏈)	Final PPSD (㏈ m)	Limit (㏈ m/1 ㎒)
U-NII 1	5 180	36	MCS5	-5.86	3.92	-1.94	11
	5 220	44		-5.91		-1.99	
	5 240	48		-6.27		-2.35	
U-NII 2A	5 260	52		-6.30		-2.38	
	5 300	60		-6.45		-2.53	
	5 320	64		-5.93		-2.01	
U-NII 2C	5 500	100		-5.54		-1.62	
	5 600	120		-6.69		-2.77	
	5 700	140		-6.66		-2.74	
Band	**Frequency (㎒)**	**Ch.**	**Data Rate (Mbps)**	**Measured PPSD (㏈ m)**	**Duty Cycle Correction Factor (㏈)**	**Final PPSD (㏈ m)**	**Limit (㏈ m/500 ㎑)**
U-NII 3	5 745	149	MCS5	-9.13	3.92	-5.21	30
	5 785	157		-8.99		-5.07	
	5 825	165		-9.17		-5.25	

Remark;

1. Final PPSD (㏈ m) = Measured PPSD (㏈ m) + Duty Cycle Correction Factor (㏈)

Test mode: 11n_HT40

Band	Frequency (㎒)	Ch.	Data Rate (Mbps)	Measured PPSD (㏈ m)	Duty Cycle Correction Factor (㏈)	Final PPSD (㏈ m)	Limit (㏈ m/1 ㎒)
U-NII 1	5 190	38	MCS6	-9.31	4.89	-4.42	11
	5 230	46		-9.64		-4.75	
U-NII 2A	5 270	54		-10.74		-5.85	
	5 310	62		-10.47		-5.58	
U-NII 2C	5 510	102		-10.12		-5.23	
	5 590	118		-11.54		-6.65	
	5 670	134		-10.88		-5.99	
Band	**Frequency (㎒)**	**Ch.**	**Data Rate (Mbps)**	**Measured PPSD (㏈ m)**	**Duty Cycle Correction Factor (㏈)**	**Final PPSD (㏈ m)**	**Limit (㏈ m/500 ㎑)**
U-NII 3	5 755	151	MCS6	-13.68	4.89	-8.79	30
	5 795	159		-13.36		-8.47	

Remark;

1. Final PPSD (㏈ m) = Measured PPSD (㏈ m) + Duty Cycle Correction Factor (㏈)

Test mode: 11ac_VHT80

Band	Frequency (㎒)	Ch.	Data Rate (Mbps)	Measured PPSD (㏈ m)	Duty Cycle Correction Factor (㏈)	Final PPSD (㏈ m)	Limit (㏈ m/1 ㎒)
U-NII 1	5 210	42	MCS6	-15.28	6.99	-8.29	11
U-NII 2A	5 290	58		-15.73		-8.74	
	5 610	122		-15.27		-8.28	
U-NII 2C	5 530	106		-14.91		-7.92	
Band	**Frequency (㎒)**	**Ch.**	**Data Rate (Mbps)**	**Measured PPSD (㏈ m)**	**Duty Cycle Correction Factor (㏈)**	**Final PPSD (㏈ m)**	**Limit (㏈ m/500 ㎑)**
U-NII 3	5 775	155	MCS6	-17.61	6.99	-10.62	30

Remark;

1. Final PPSD (㏈ m) = Measured PPSD (㏈ m) + Duty Cycle Correction Factor (㏈)

Band-crossing channels

Mode	Band	Frequency (㎒)	Ch.	Data Rate (Mbps)	Measured PPSD (㏈m)	Duty Cycle Correction Factor (㏈)	Final PPSD (㏈m)	Limit (㏈m/1㎒ or ㏈m/500㎑)
11a	U-NII 2C	5 720	144	48	-6.24	4.03	-2.21	11
	U-NII 3				-10.16		-6.13	30
11ac_VHT20	U-NII 2C	5 720	144	MCS5	-6.79	3.92	-2.87	11
	U-NII 3				-9.74		-5.82	30
11n_HT40	U-NII 2C	5 710	142	MCS6	-11.32	4.89	-6.43	11
	U-NII 3				-14.36		-9.47	30
11ac_VHT80	U-NII 2C	5 690	138	MCS6	-16.64	6.99	-9.65	11
	U-NII 3				-19.22		-12.23	30

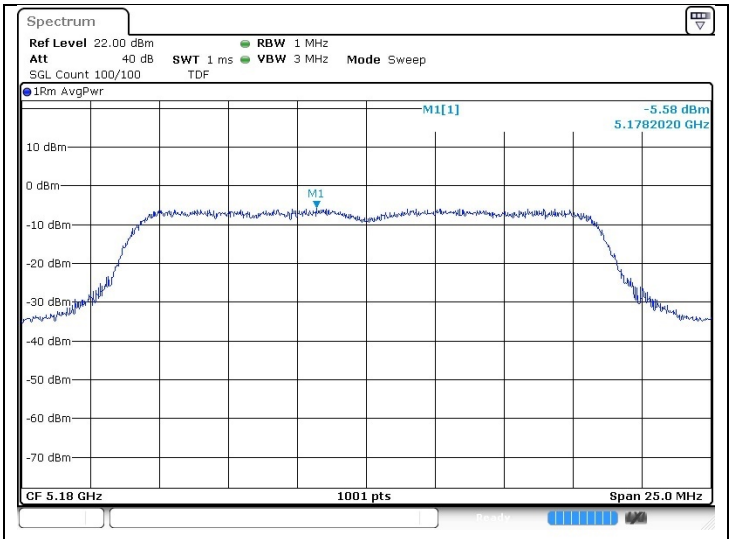
Remark;

1. Final PPSD (㏈m) = Measured PPSD (㏈m) + Duty Cycle Correction Factor (㏈)

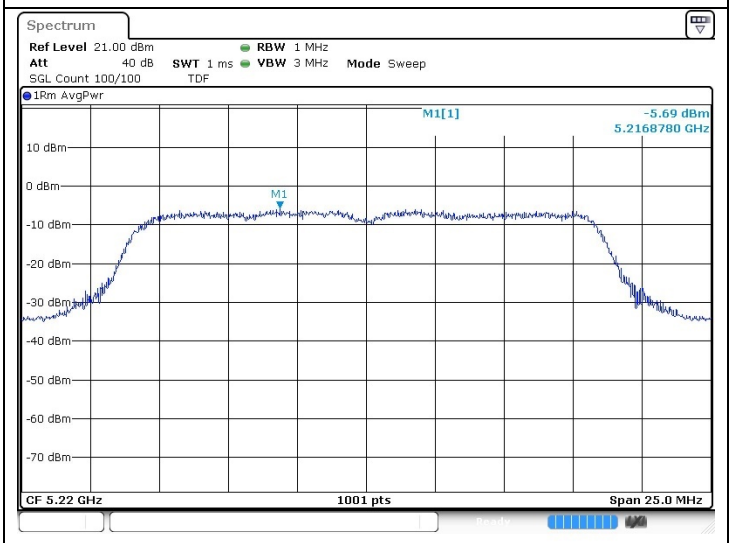
- Test plots

802.11a (Band 1)

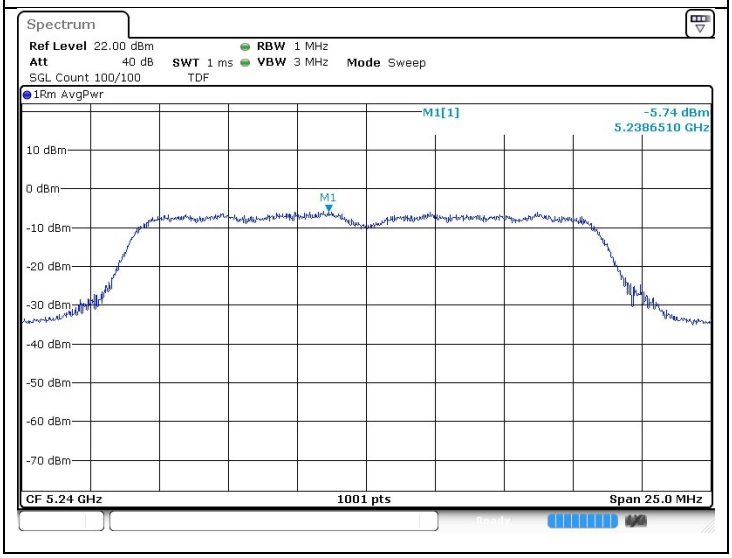
Low Channel
(5 180 ㎒)



Middle Channel
(5 220 ㎒)

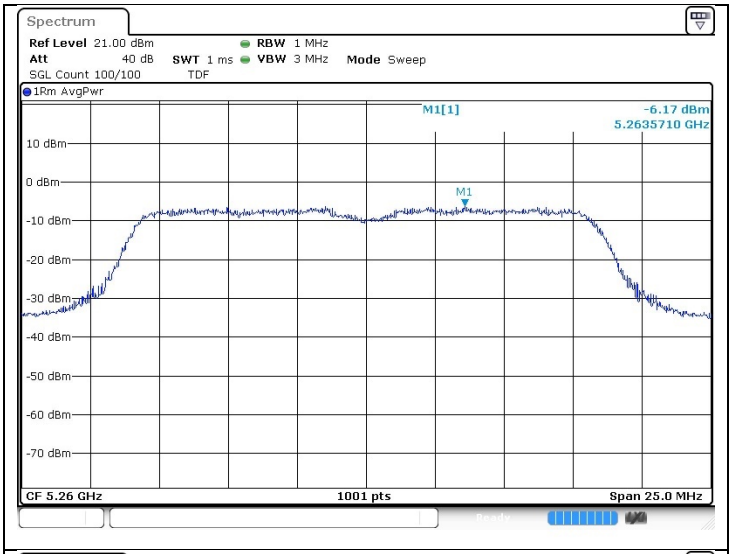


High Channel
(5 240 ㎒)

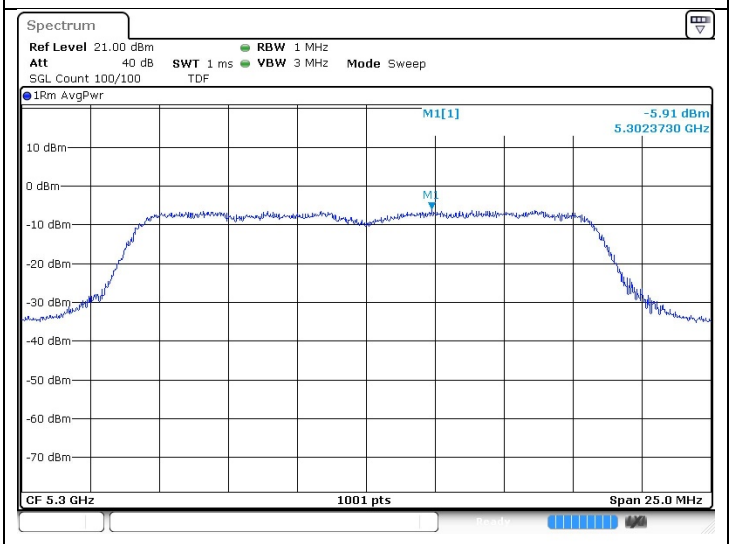


802.11a (Band 2A)

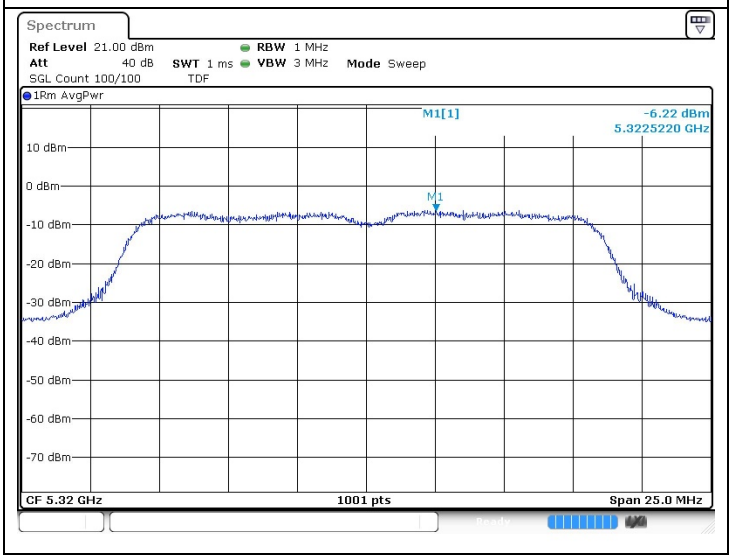
Low Channel
(5 260 ㎒)



Middle Channel
(5 300 ㎒)

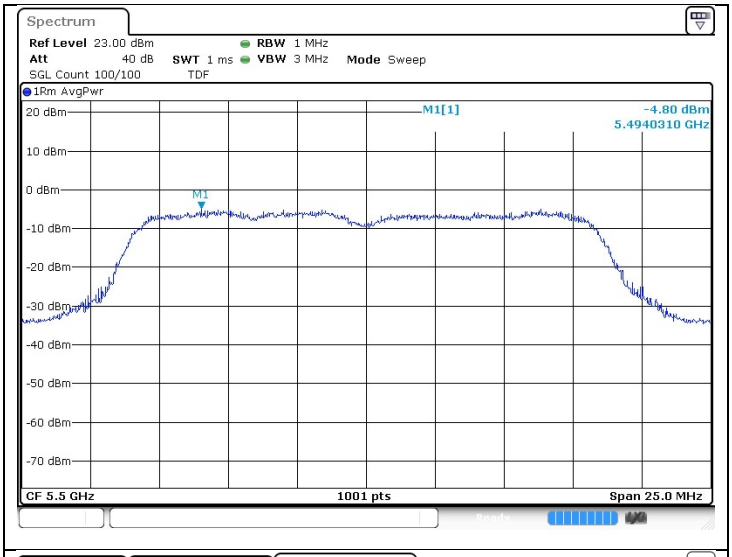


High Channel
(5 320 ㎒)

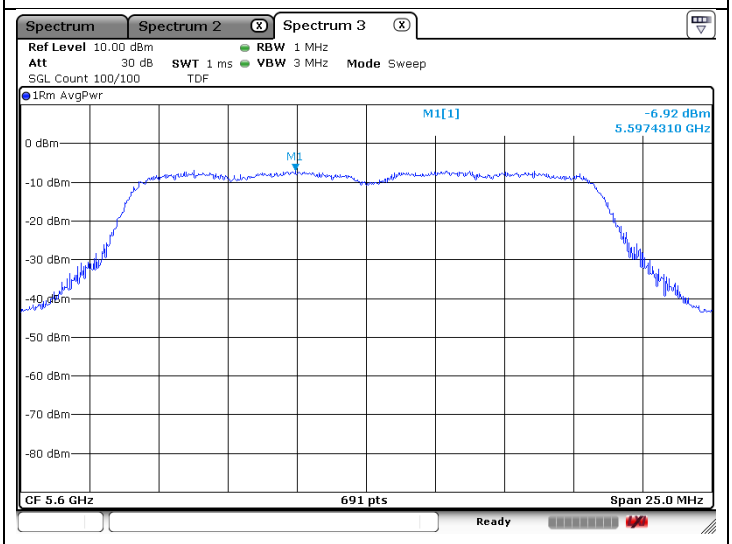


802.11a (Band 2C)

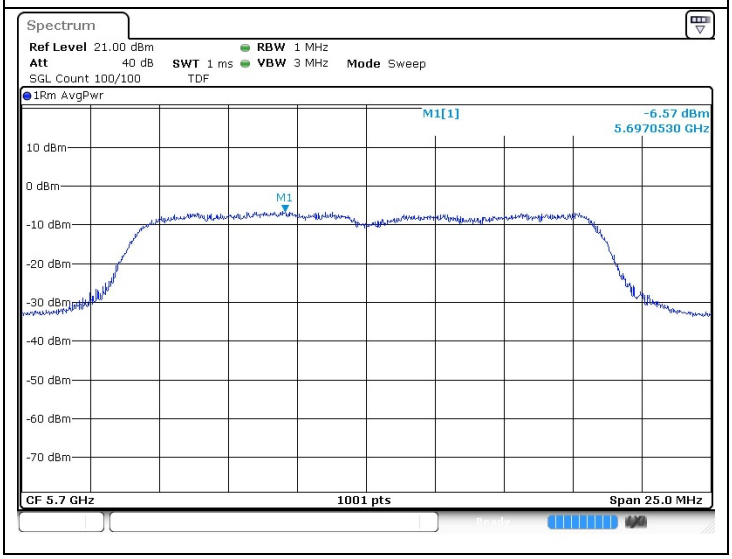
Low Channel
(5 500 ㎒)



Middle Channel
(5 600 ㎒)

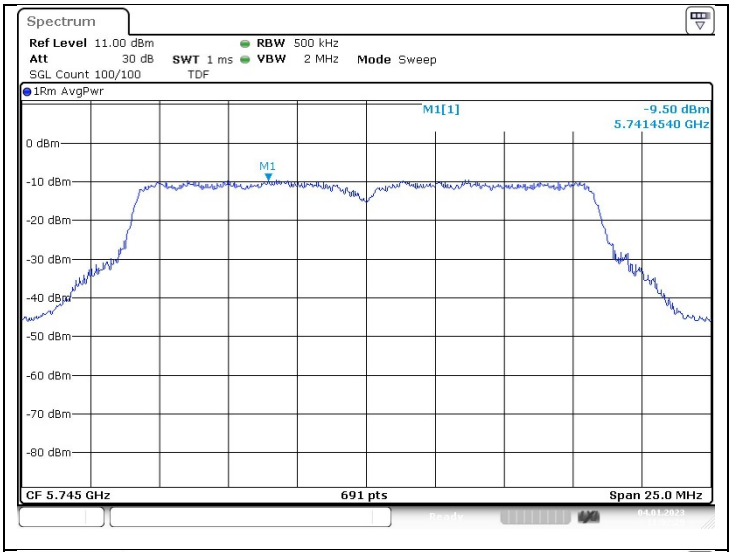


High Channel
(5 700 ㎒)

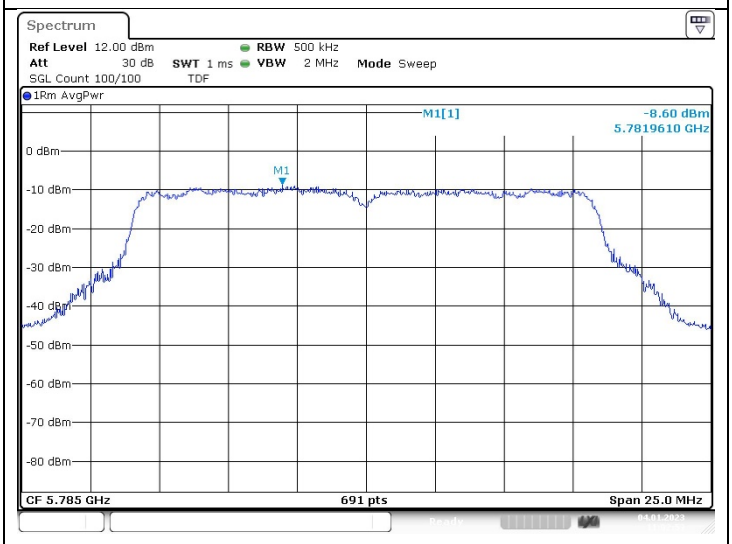


802.11a (Band 3)

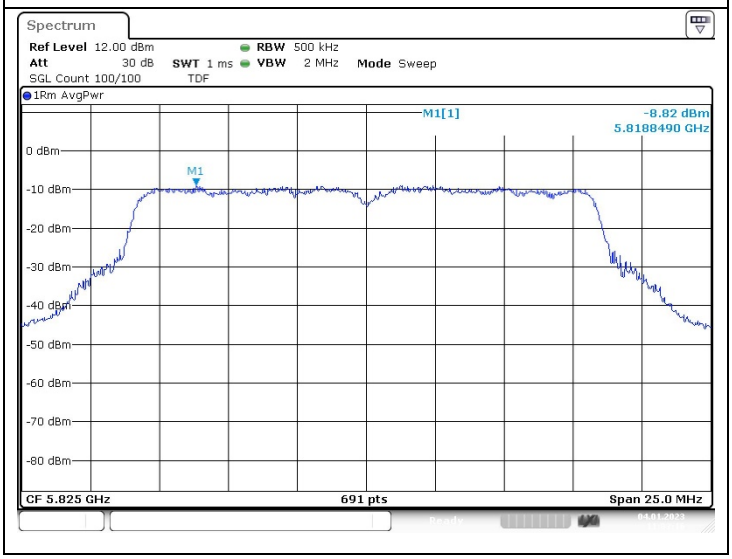
Low Channel
(5 745 ㎒)



Middle Channel
(5 785 ㎒)

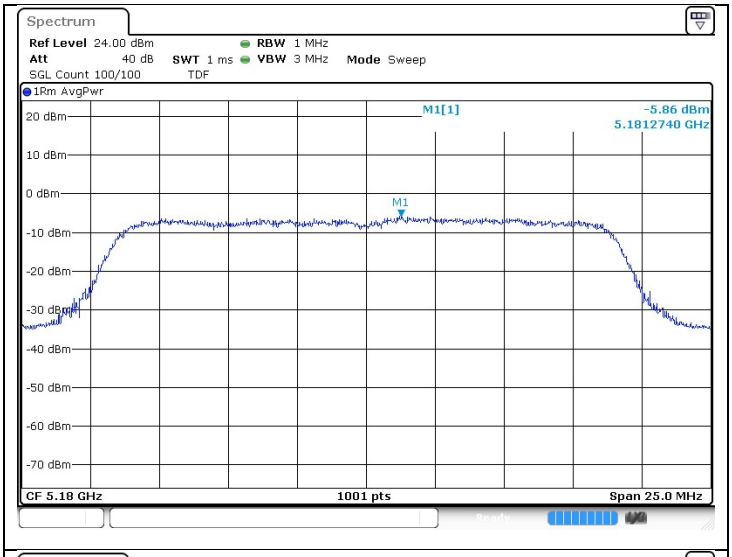


High Channel
(5 825 ㎒)

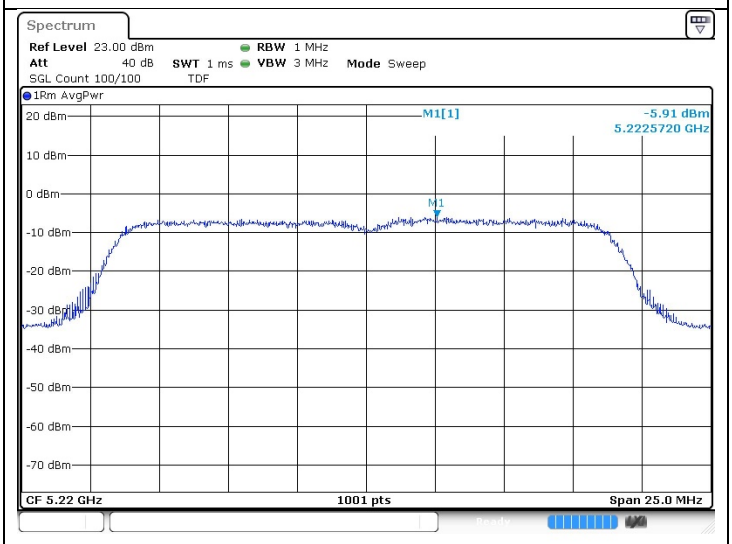


802.11ac_VHT20 (Band 1)

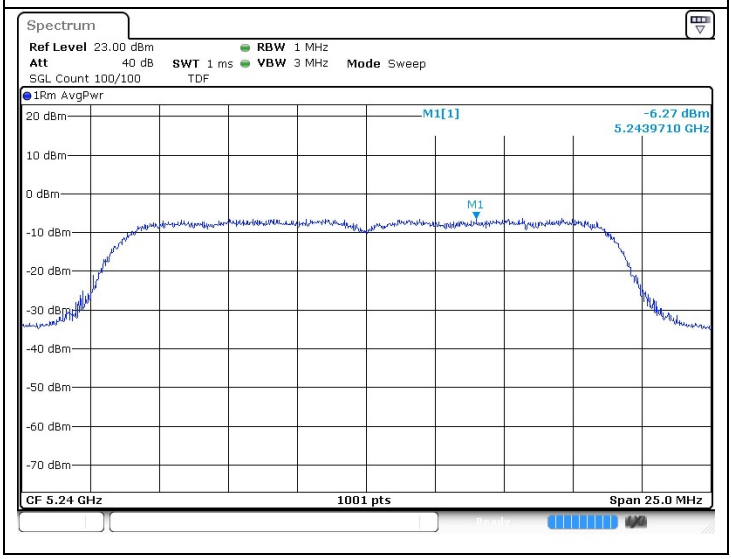
Low Channel
(5 180 ㎒)



Middle Channel
(5 220 ㎒)

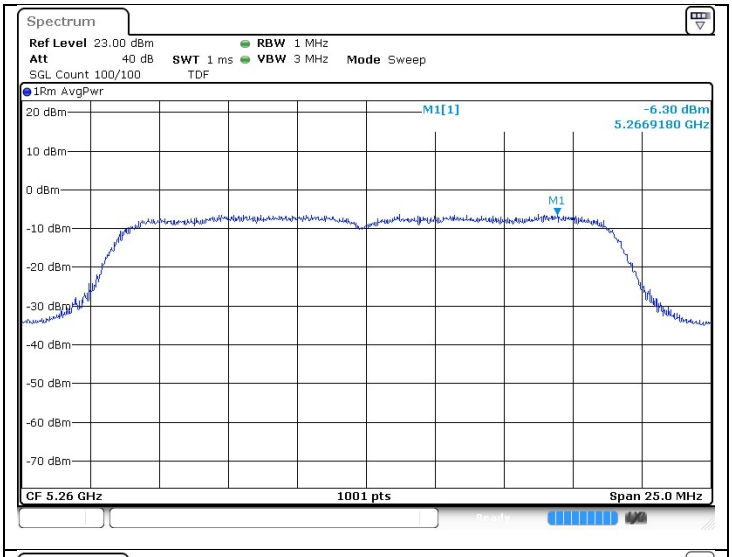


High Channel
(5 240 ㎒)

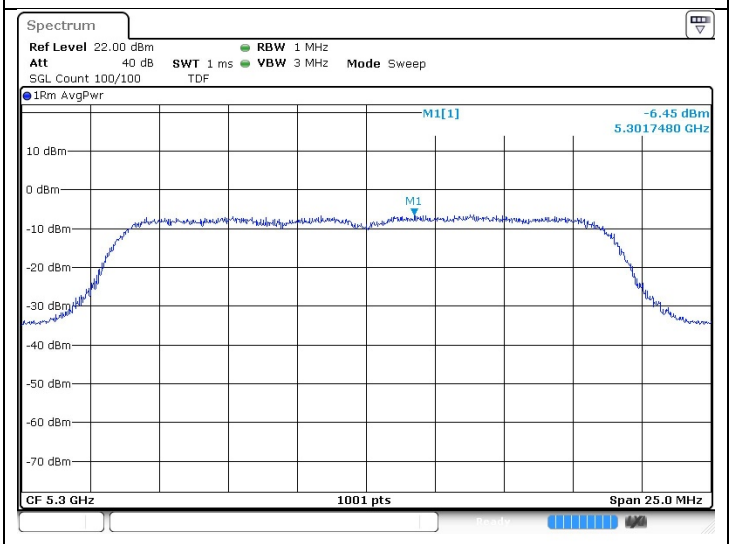


802.11ac_VHT20 (Band 2A)

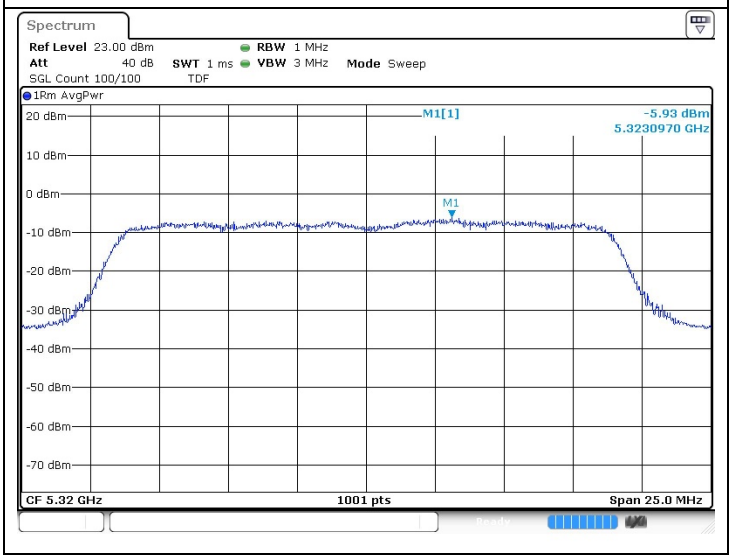
Low Channel
(5 260 ㎒)



Middle Channel
(5 300 ㎒)

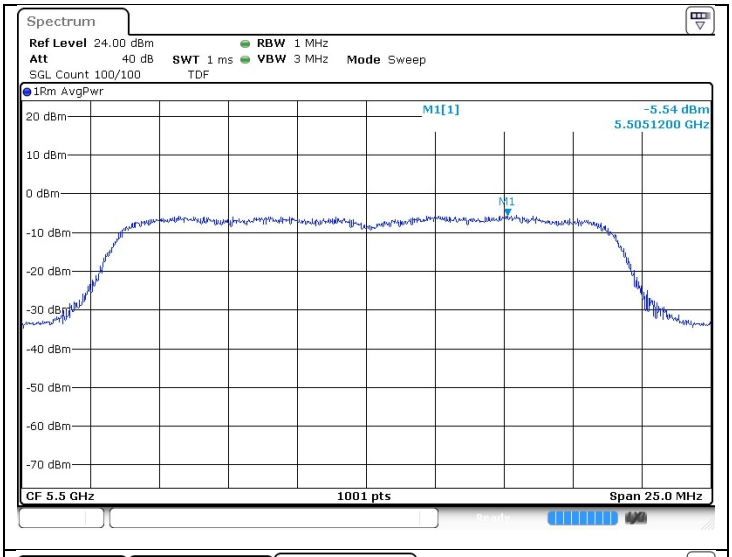


High Channel
(5 320 ㎒)

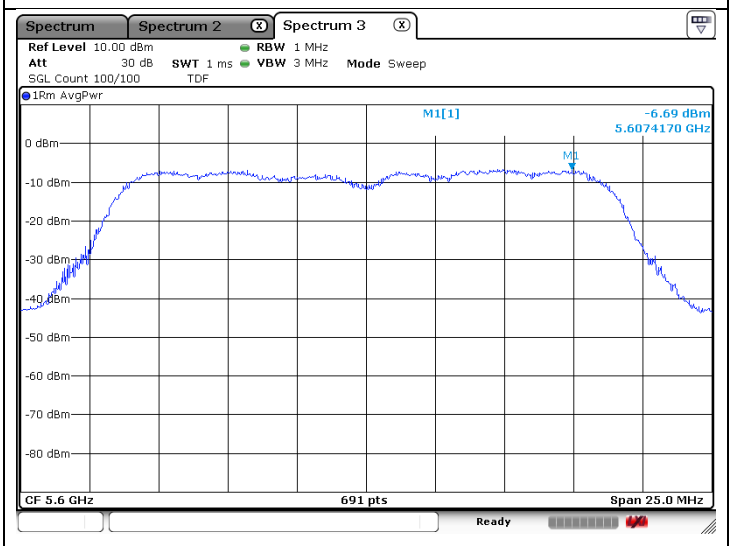


802.11ac_VHT20 (Band 2C)

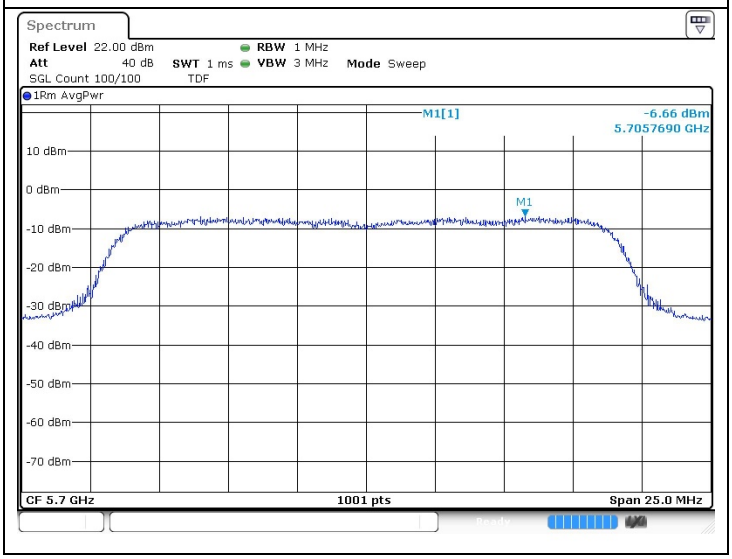
Low Channel
(5 500 ㎒)



Middle Channel
(5 600 ㎒)

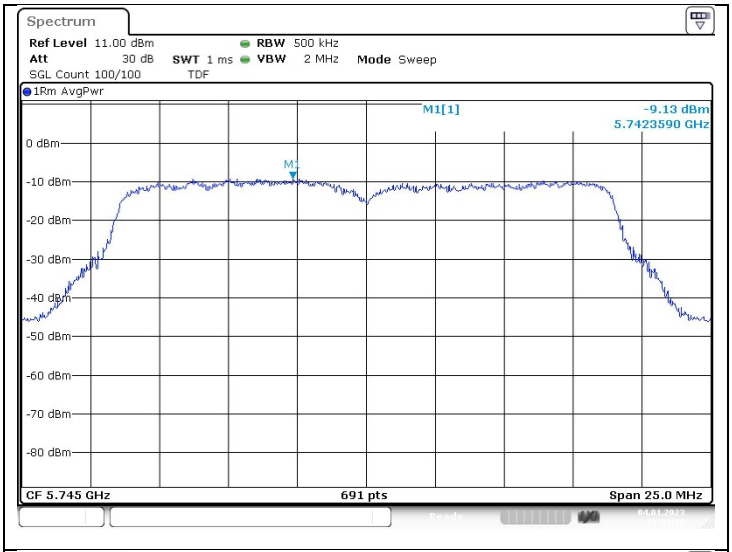


High Channel
(5 700 ㎒)

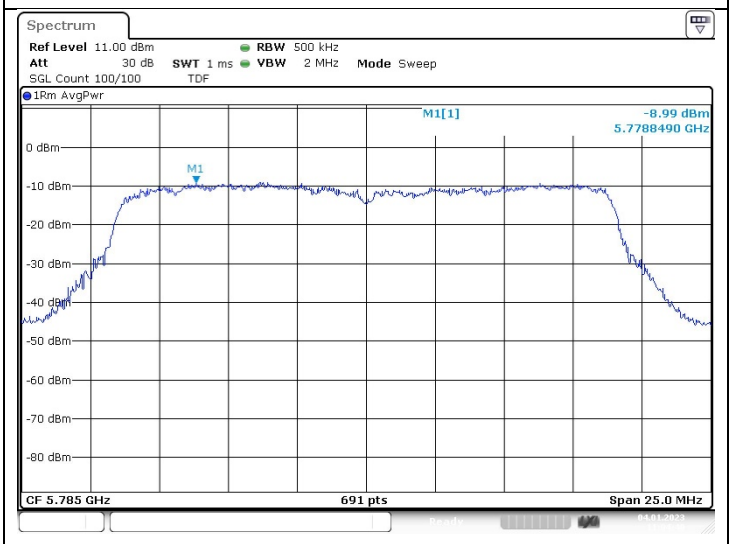


802.11ac_VHT20 (Band 3)

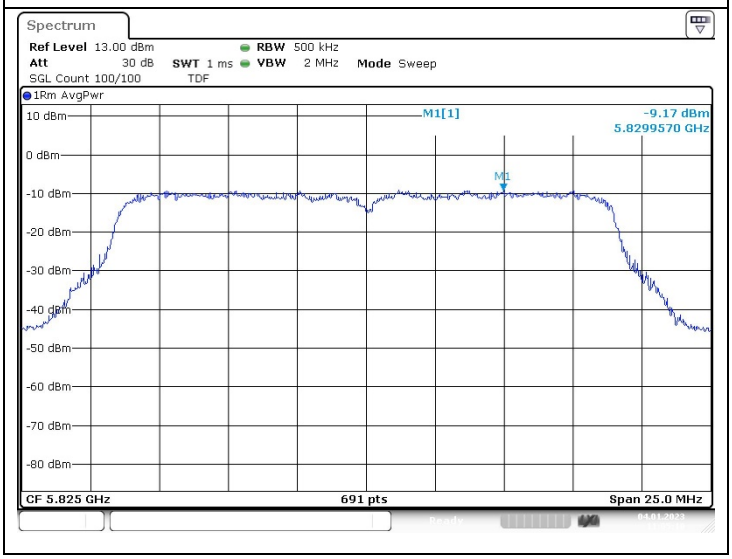
Low Channel
(5 745 ㎒)



Middle Channel
(5 785 ㎒)

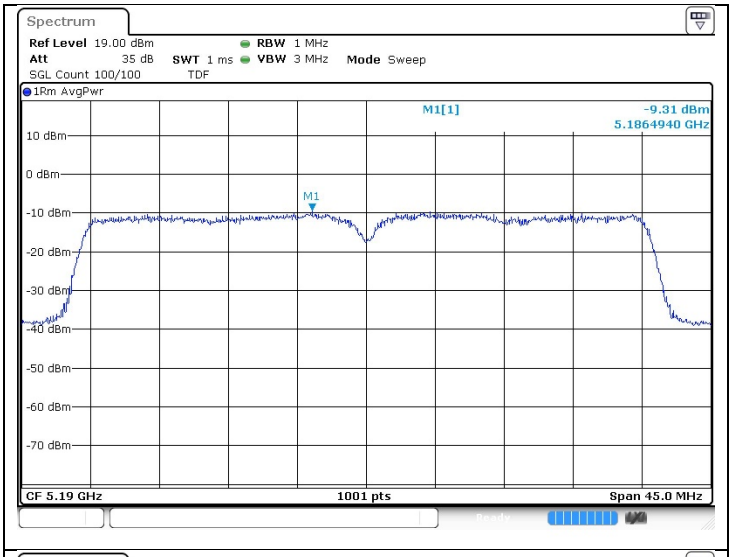


High Channel
(5 825 ㎒)

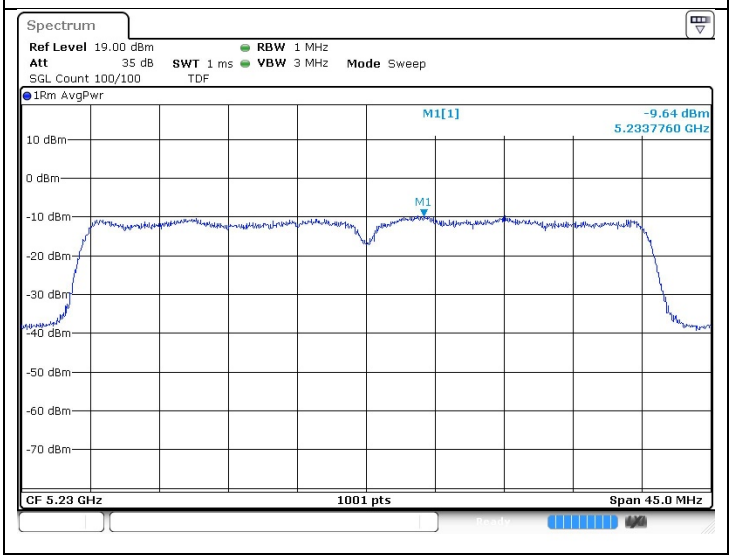


802.11n_HT40 (Band 1)

Low Channel
(5 190 ㎒)

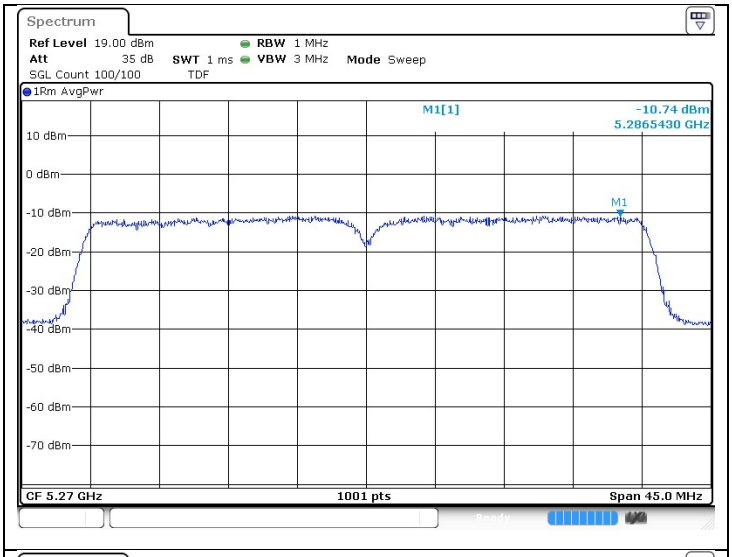


High Channel
(5 230 ㎒)

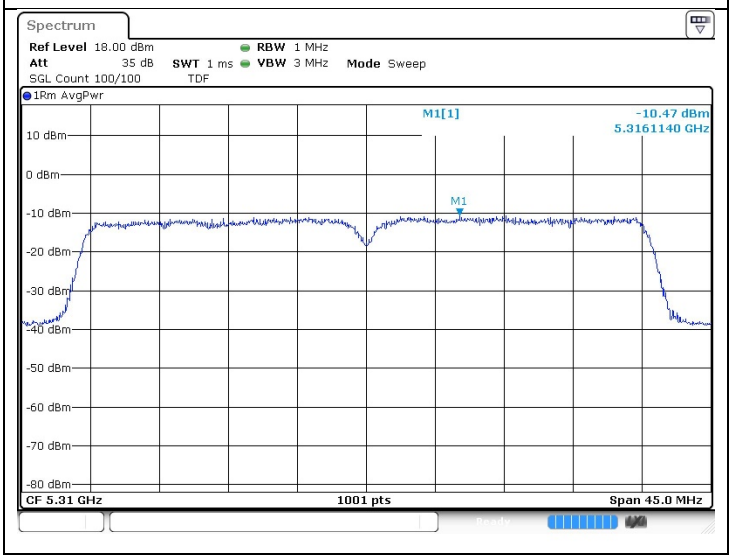


802.11n_HT40 (Band 2A)

Low Channel
(5 270 ㎒)

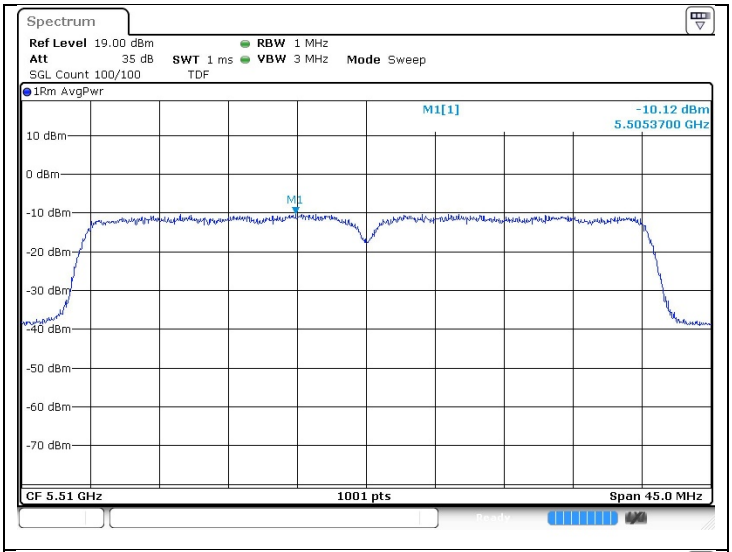


High Channel
(5 310 ㎒)

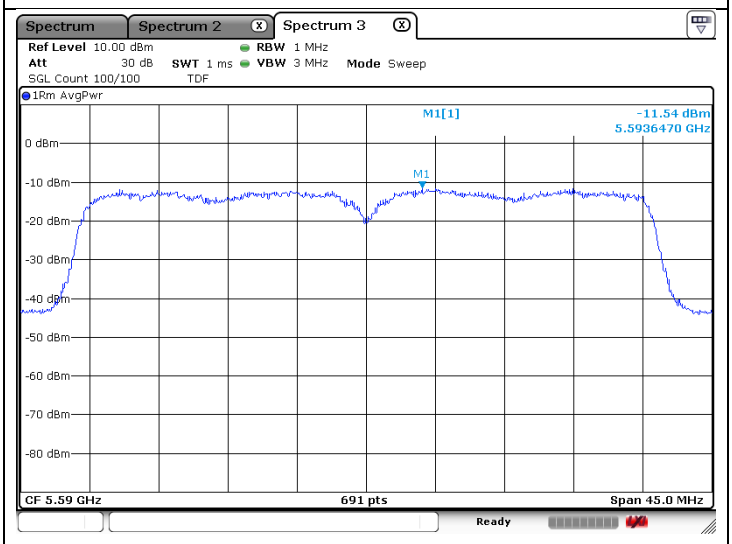


802.11n_HT40 (Band 2C)

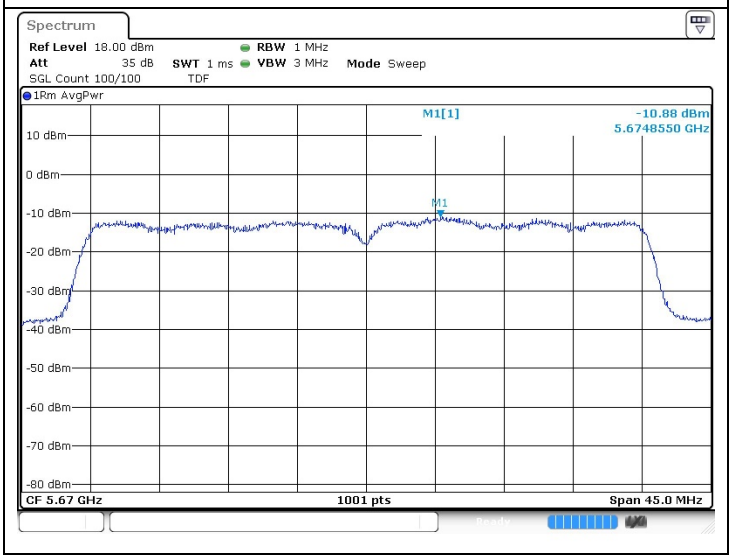
Low Channel
(5 510 ㎒)



Middle Channel
(5 590 ㎒)

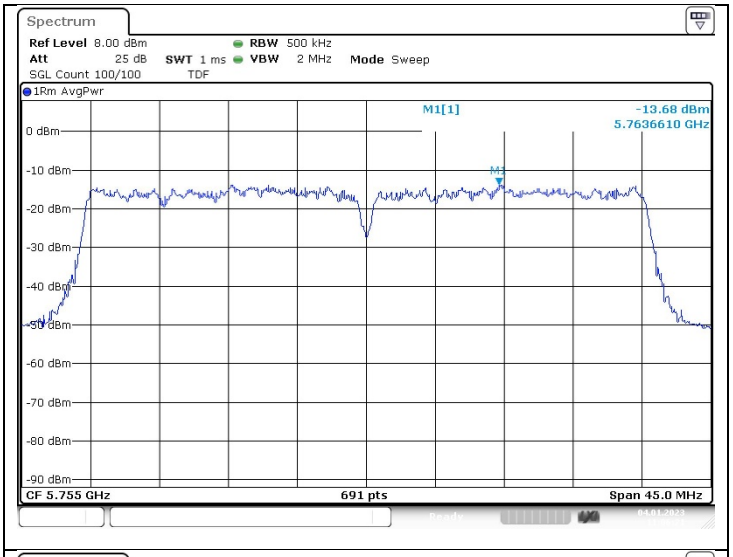


High Channel
(5 670 ㎒)

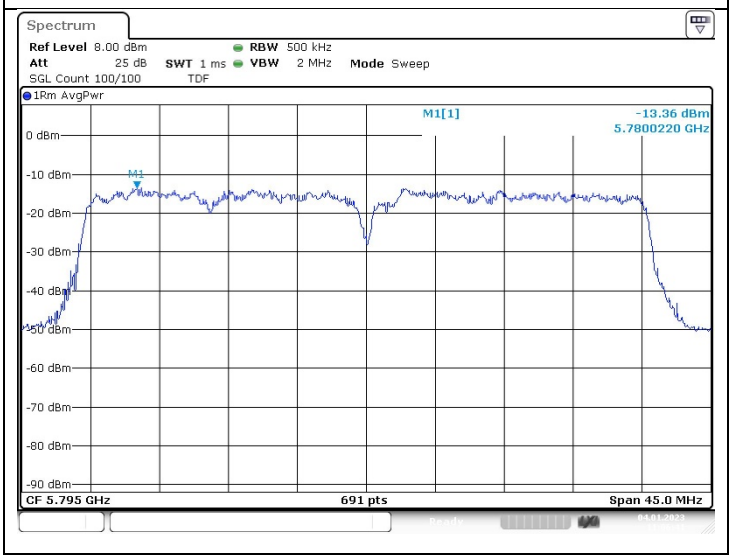


802.11n_HT40 (Band 3)

Low Channel
(5 755 ㎒)

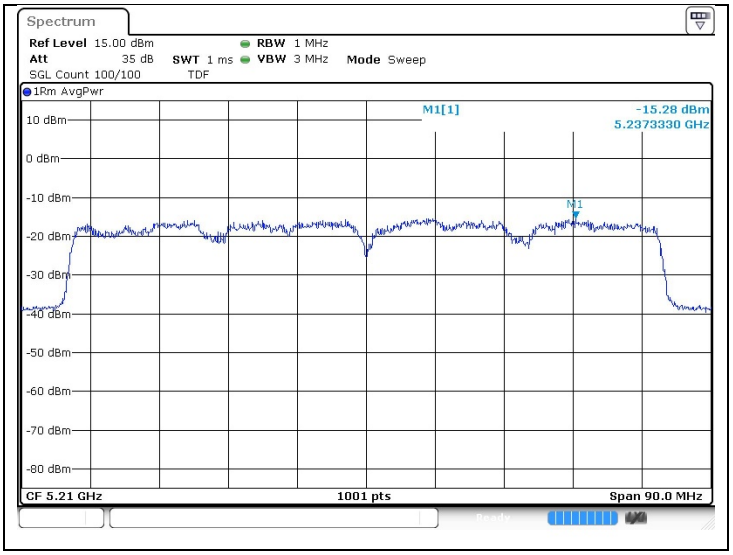


High Channel
(5 795 ㎒)



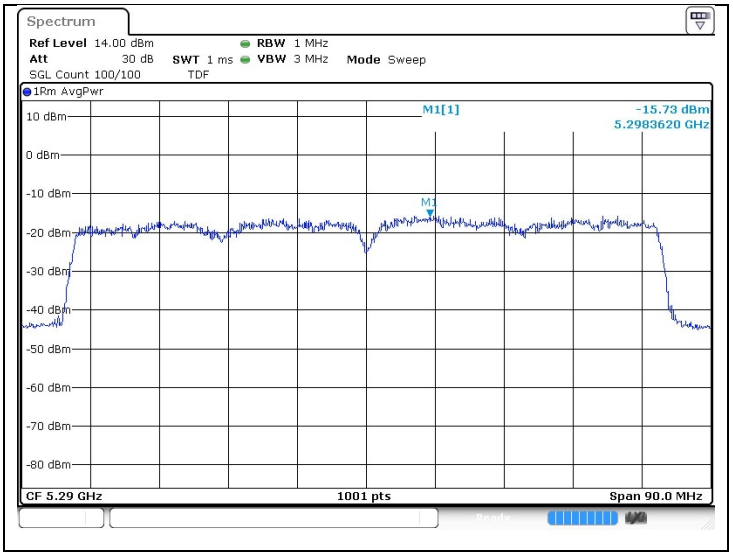
802.11ac_VHT80 (Band 1)

Middle Channel
(5 210 ㎒)



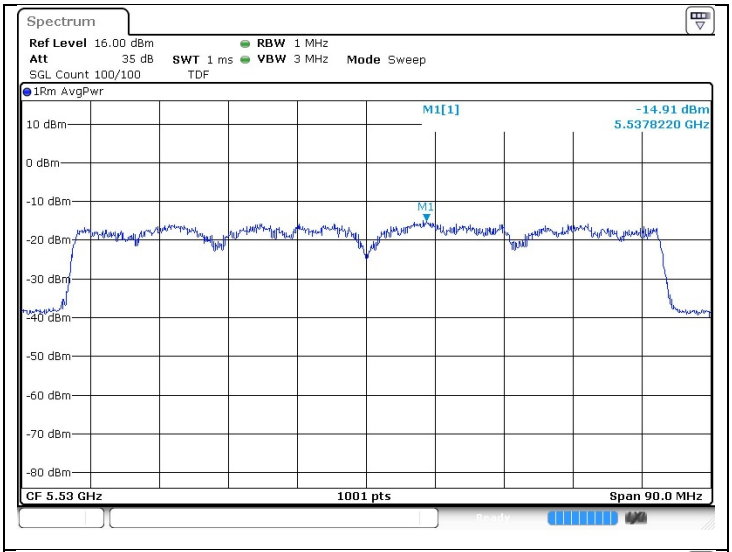
802.11ac_VHT80 (Band 2A)

Middle Channel
(5 290 ㎒)

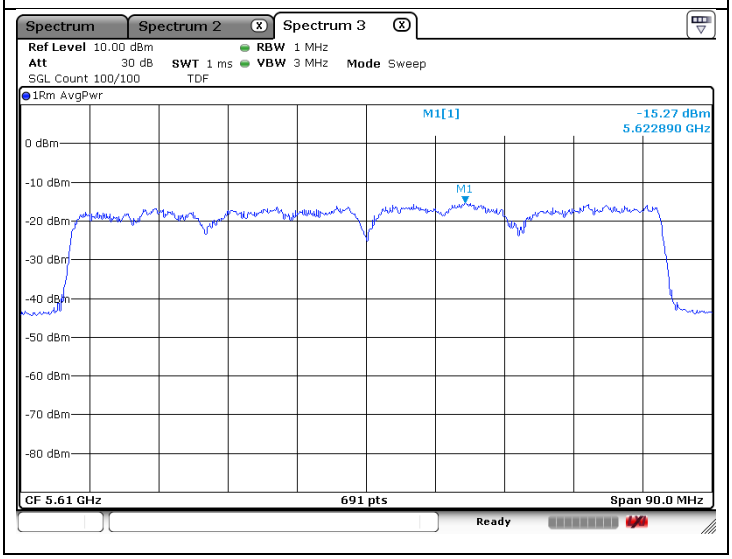


802.11ac_VHT80 (Band 2C)

Low Channel
(5 530 ㎒)

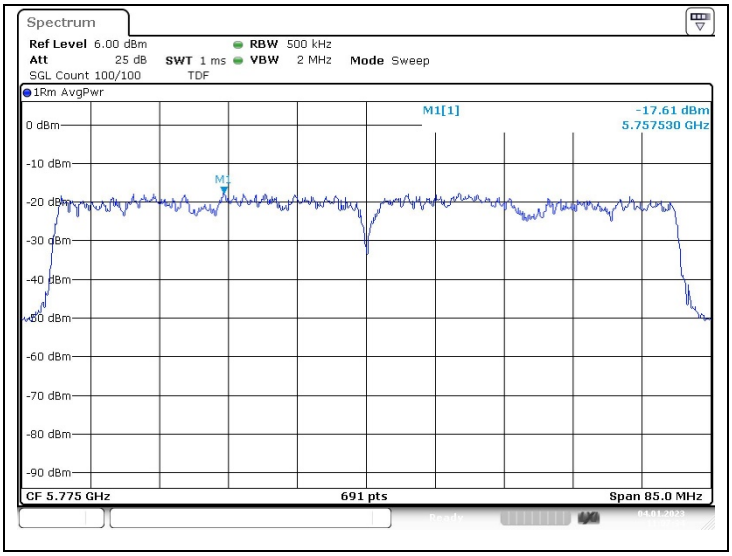


High Channel
(5 610 ㎒)



802.11ac_VHT80 (Band 3)

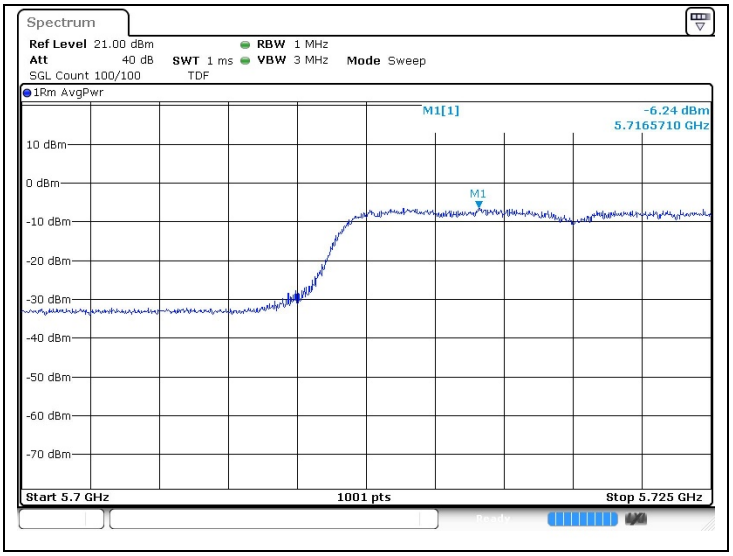
Middle Channel
(5 775 ㎒)



Band-crossing channels

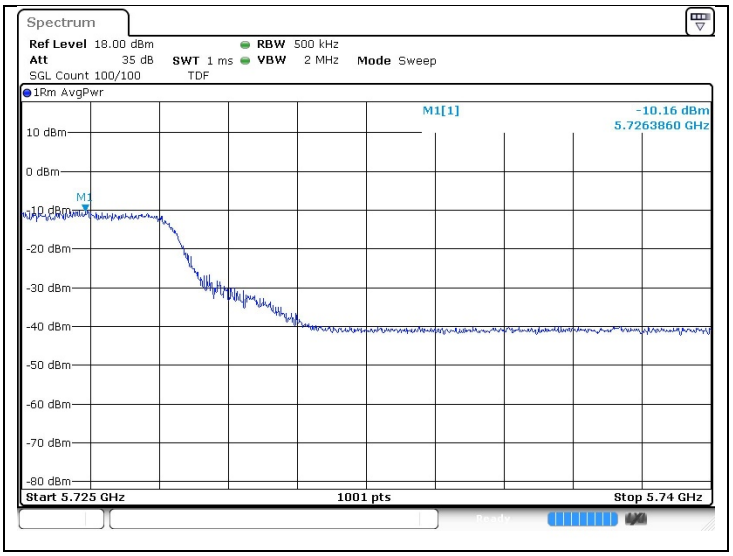
802.11a (Band 2C)

High Channel
(5 720 ㎒)



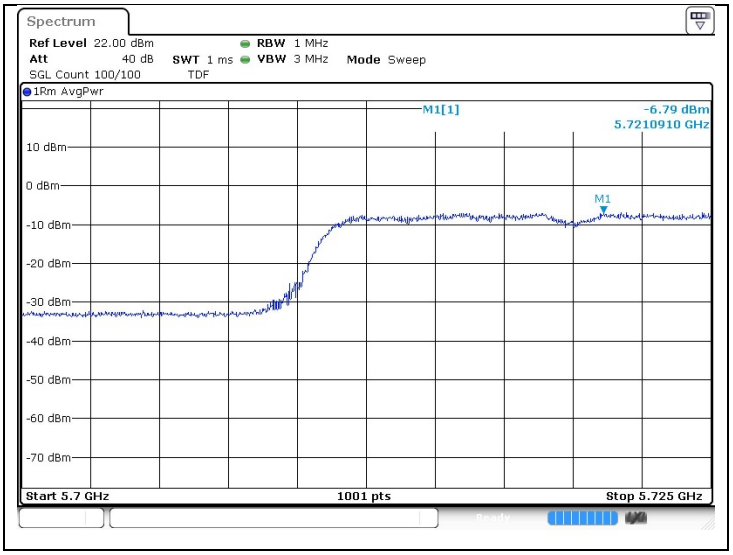
802.11a (Band 3)

High Channel
(5 720 ㎒)



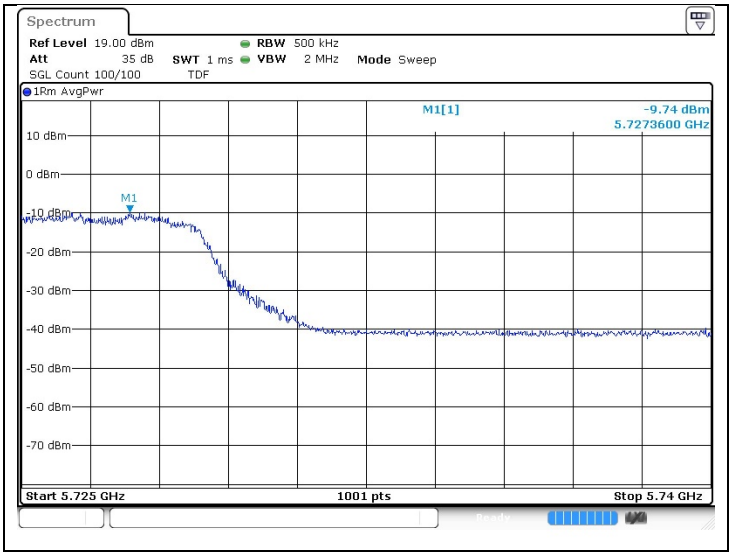
802.11ac_VHT20 (Band 2C)

High Channel
(5 720 ㎒)



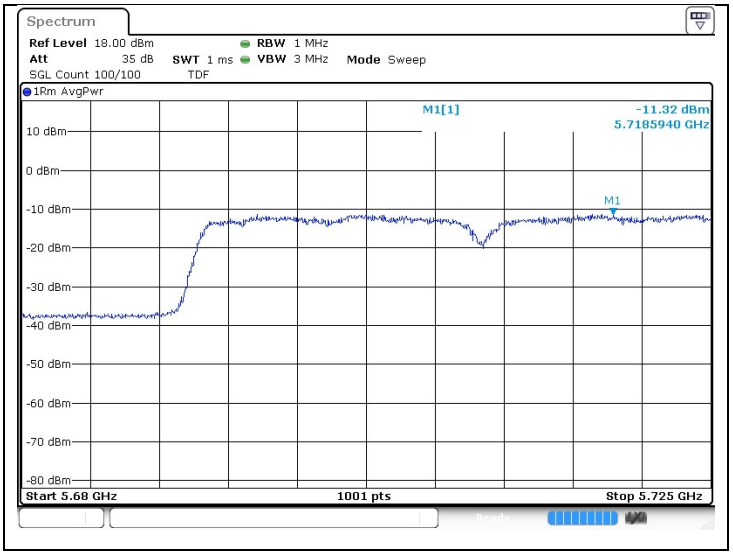
802.11ac_VHT20 (Band 3)

High Channel
(5 720 ㎒)



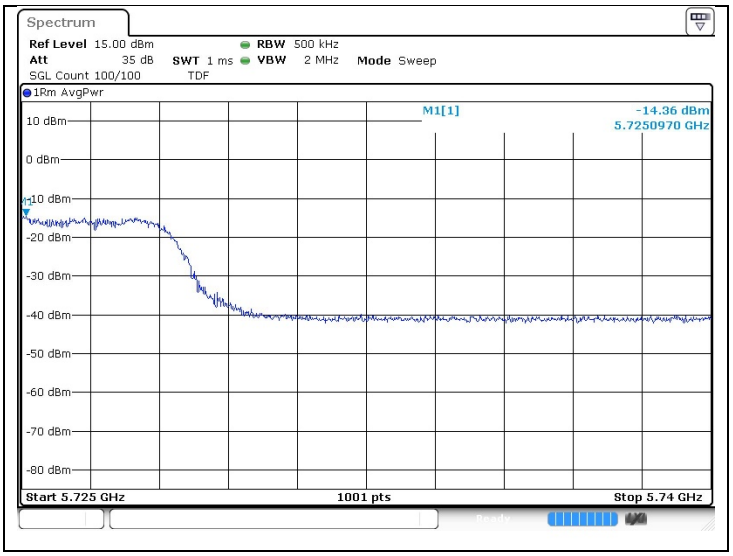
802.11n_HT40 (Band 2C)

High Channel
(5 710 ㎒)



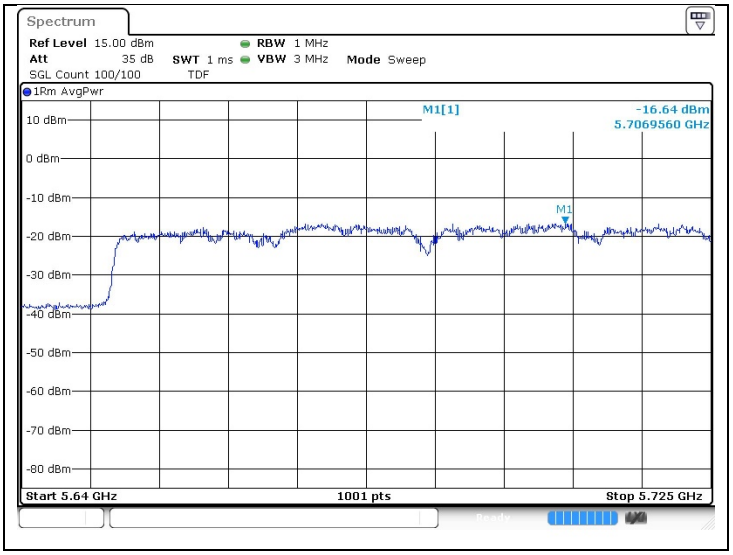
802.11n_HT40 (Band 3)

High Channel
(5 710 ㎒)



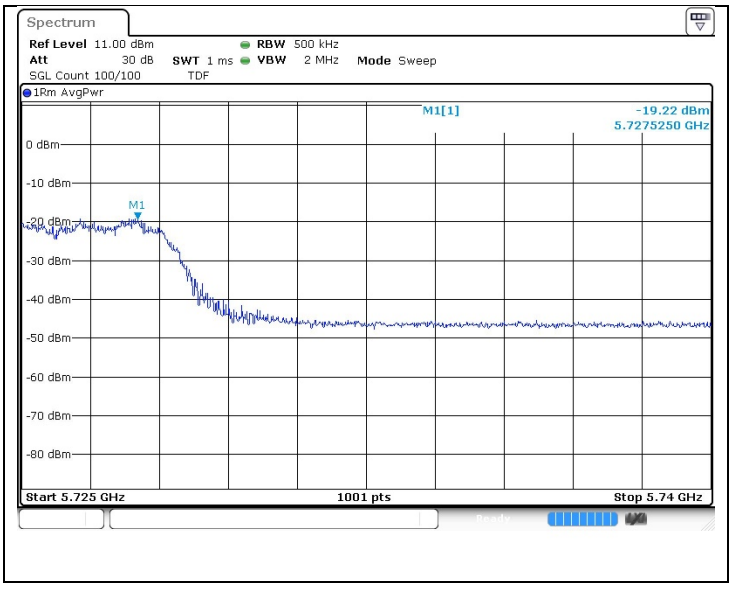
802.11ac_VHT80 (Band 2C)

Middle Channel
(5 690 ㎒)



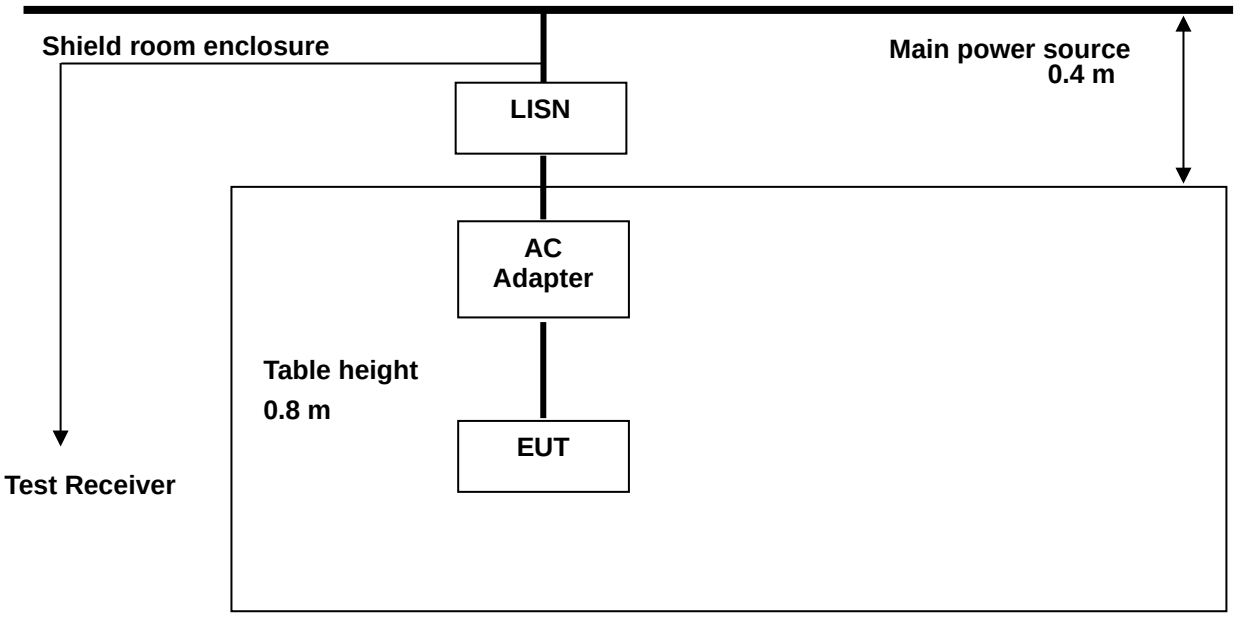
802.11ac_VHT80 (Band 3)

Middle Channel
(5 690 ㎒)



7. AC Power Line Conducted Emission

7.1. Test Setup



7.2. Limit

According to §15.207(a), for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 ㎑ to 30 ㎒, shall not exceed the limits in the following table, as measured using a 50 ㎌ H /50 ohms line impedance stabilization network (LISN).
Compliance with the provision of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency of emission (㎒)	Conducted limit (㏈㎶)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

7.3. Test Procedures

AC conducted emissions from the EUT were measured according to the dictates of ANSI C63.10:2013

1. The test procedure is performed in a 6.5 m × 3.5 m × 3.5 m (L × W × H) shielded room. The EUT along with its peripherals were placed on a 1.0 m (W) × 1.5 m (L) and 0.8 m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane.
2. The EUT was connected to power mains through a line impedance stabilization network (LISN) which provides 50 ohm coupling impedance for measuring instrument and the chassis ground was bounded to the horizontal ground plane of shielded room.
3. All peripherals were connected to the second LISN and the chassis ground also bounded to the horizontal ground plane of shielded room.
4. The excess power cable between the EUT and the LISN was bundled. The power cables of peripherals were unbundled. All connecting cables of EUT and peripherals were moved to find the maximum emission.

7.4. Test Results

The following table shows the highest levels of conducted emissions on both phase of Hot and Neutral line.

Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 % R.H.

Frequency range : 0.15 ㎒ - 30 ㎒
Measured Bandwidth : 9 ㎑

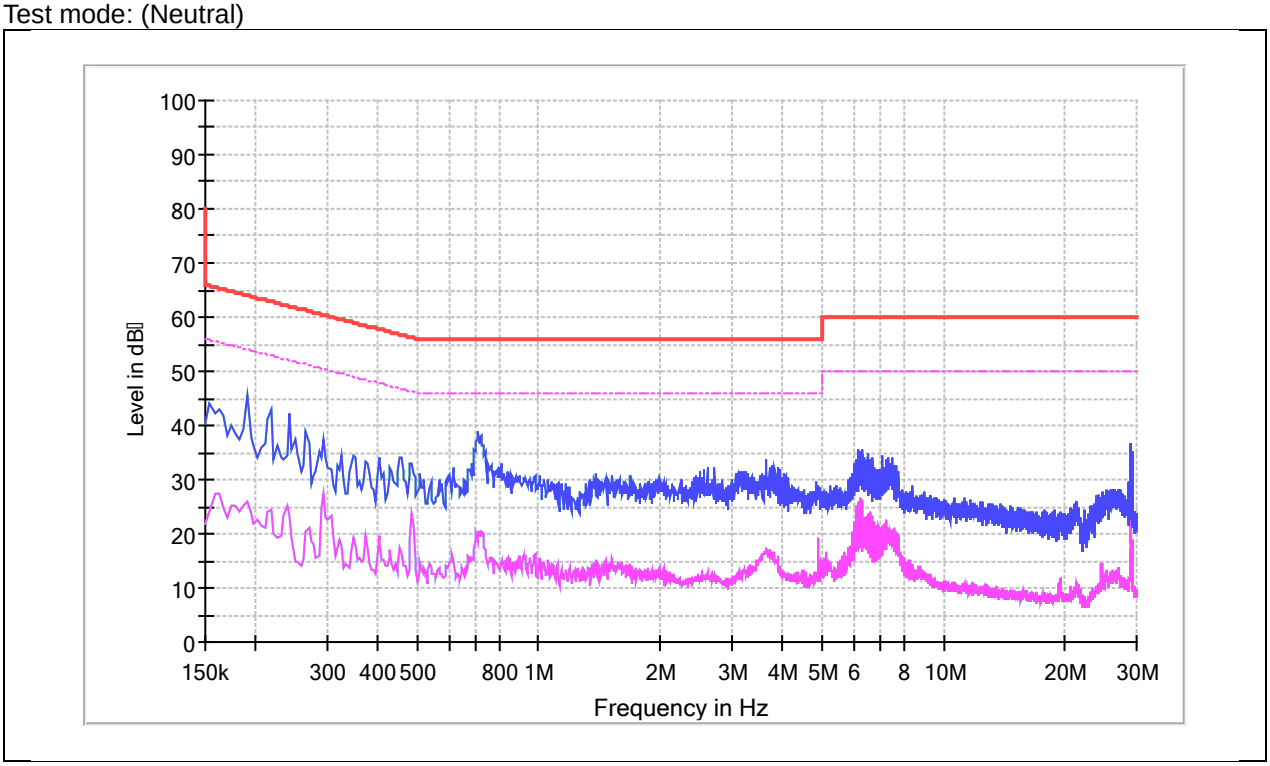
FREQ.	LEVEL (dBμV)		LINE	LIMIT (dBμV)		MARGIN (dB)	
(㎒)	Q-Peak	Average		Q-Peak	Average	Q-Peak	Average
0.19	38.60	25.60	N	64.04	54.04	25.44	28.44
0.71	34.70	21.20	N	56.00	46.00	21.30	24.80
2.57	25.20	12.50	N	56.00	46.00	30.80	33.50
3.63	25.00	16.70	N	56.00	46.00	31.00	29.30
6.21	32.60	26.70	N	60.00	50.00	27.40	23.30
29.01	28.40	19.80	N	60.00	50.00	31.60	30.20
0.22	34.50	20.50	H	62.82	52.82	28.32	32.32
0.27	32.10	16.90	H	61.12	51.12	29.02	34.22
0.71	34.60	21.60	H	56.00	46.00	21.40	24.40
3.24	26.40	12.00	H	56.00	46.00	29.60	34.00
7.33	23.90	16.60	H	60.00	50.00	36.10	33.40
28.98	27.20	18.20	H	60.00	50.00	32.80	31.80

Remark;

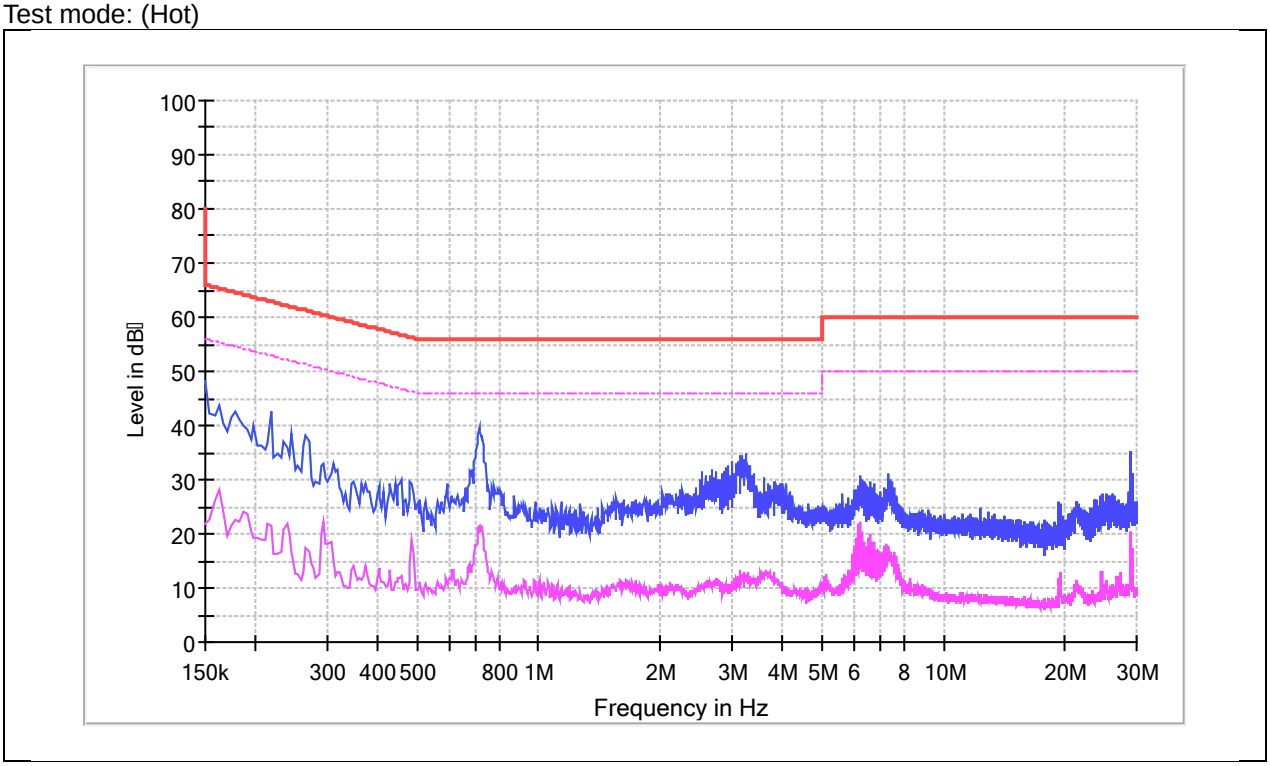
1. Line (H): Hot, Line (N): Neutral
2. All data rates and modes of operation were investigated and the worst-case emissions were reported using **11n_HT40 (Band 2C) / MCS 6 / Low channel.**
3. The limit for Class B device(s) from 150 ㎑ to 30 ㎒ are specified in section of the Title 47 CFR.
4. Traces shown in plot were made by using a quasi-peak detector and average detector.
5. Deviations to the Specifications: None.

- Test plots

Test mode: (Neutral)



Test mode: (Hot)



8. Antenna Requirement

8.1. Standard Applicable

For intentional device, according to FCC 47 CFR Section §15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section 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. And according to FCC 47 CFR Section §15.407(a) 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 gain of the antenna exceeds 6 dBi.

8.2. Antenna Connected Construction

Antenna used in this product is Dipole antenna and peak max gain of antenna as below.

Band	5 150 ㎒ ~ 5 250 ㎒	5 250 ㎒ ~ 5 350 ㎒	5 470 ㎒ ~ 5 725 ㎒	5 725 ㎒ ~ 5 850 ㎒
Mode	11a/n_HT20, HT40, 11ac_VHT20, VHT40, VHT80			
Gain	1.5 dBi	1.5 dBi	-5.87 dBi	-2.16 dBi

- End of the Test Report -