



9.5. Power Spectral Density

Requirements

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	17dBm/ MHz If $G_{TX} > 6$ dBi, then $PSD = 17 - (G_{TX} - 6)$
		Fixed point-to-point Access Point	17dBm/ MHz If $G_{TX} > 23$ dBi, then $PSD = 17 - (G_{TX} - 23)$
	√	Indoor Access Point	17dBm/ MHz If $G_{TX} > 6$ dBi, then $PSD = 17 - (G_{TX} - 6)$
		Client device	11dBm/ MHz If $G_{TX} > 6$ dBi, then $PSD = 11 - (G_{TX} - 6)$
U-NII-3	---		For Point-to-multipoint systems (P2M): 30dBm/ 500kHz. If $G_{TX} > 6$ dBi, then $PSD = 30 - (G_{TX} - 6)$ For Point-to-point systems (P2P): 30dBm/ 500kHz

Note:

1. PSD = power spectral density that he same method as used to determine the conducted output power shall be used to determine the power spectral density. And power spectral density in dBm/MHz
2. G_{TX} = the maximum transmitting antenna directional gain in dBi.
3. Directional Gain = $G_{ant} + 10 \log (N_{ant})$ dBi.

Nant: Number of Transmit Antennas

G1, G2,..., Gn: Gain of Individual Antennas (Same for Each Antenna)

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Test procedure

For U-NII-1:

Using method SA-2_with Duty cycle <98 %

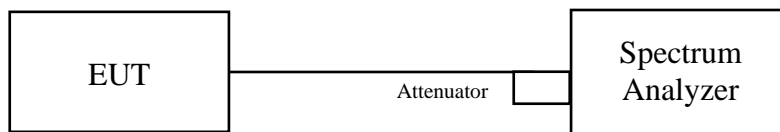
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 1 MHz, Set VBW \geq 3 RBW, Detector = RMS
- Sweep time = auto, trigger set to “free run”.
- Trace average at least 100 traces in power averaging mode.
- Record the max value and add 10 log (1/duty cycle)

For U-NII-3:

with Duty cycle <98 %

- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 300 kHz, Set VBW \geq 1 MHz, Detector = RMS
- Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.
- Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(500 \text{ kHz}/300\text{kHz})$
- Sweep time = auto, trigger set to “free run”.
- Trace average at least 100 traces in power averaging mode.

Test Setup



The loss between RF output port of the EUT and the input port of the Spectrum Analyzer has been taken into consideration.

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Test Data

For U-NII-1

Non-Beamforming Mode

802.11a

CHAN.	FREQ. (MHz)	PSD (dBm)		TOTAL PSD with duty factor (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
36	5180	2.987	3.469	6.40	15.54	PASS
44	5220	6.428	5.208	9.03	15.54	PASS
48	5240	7.775	8.804	11.49	15.54	PASS

Note:

- Method a) of power density measurement of KDB 662911 is using for calculating total power density.
Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = 7.46 dBi > 6 dBi , so the limit shall be reduced.
- Refer to section 6.6 for duty cycle spectrum plot.

802.11ac (VHT20)

CHAN.	FREQ. (MHz)	PSD (dBm)		TOTAL PSD with duty factor (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
36	5180	2.670	2.444	5.88	15.54	PASS
44	5220	4.956	3.599	7.66	15.54	PASS
48	5240	7.109	7.507	10.64	15.54	PASS

Note:

- Method a) of power density measurement of KDB 662911 is using for calculating total power density.
Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = 7.46 dBi > 6 dBi , so the limit shall be reduced.
- Refer to section 6.6 for duty cycle spectrum plot.

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802.11ac (VHT40)

CHAN.	FREQ. (MHz)	PSD (dBm)		TOTAL PSD with duty factor (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
38	5190	-5.667	-6.938	-2.66	15.54	PASS
46	5230	-1.914	-1.996	1.64	15.54	PASS

Note:

1. Method a) of power density measurement of KDB 662911 is using for calculating total power density.
Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 7.46 dBi > 6 dBi , so the limit shall be reduced.
3. Refer to section 6.6 for duty cycle spectrum plot.

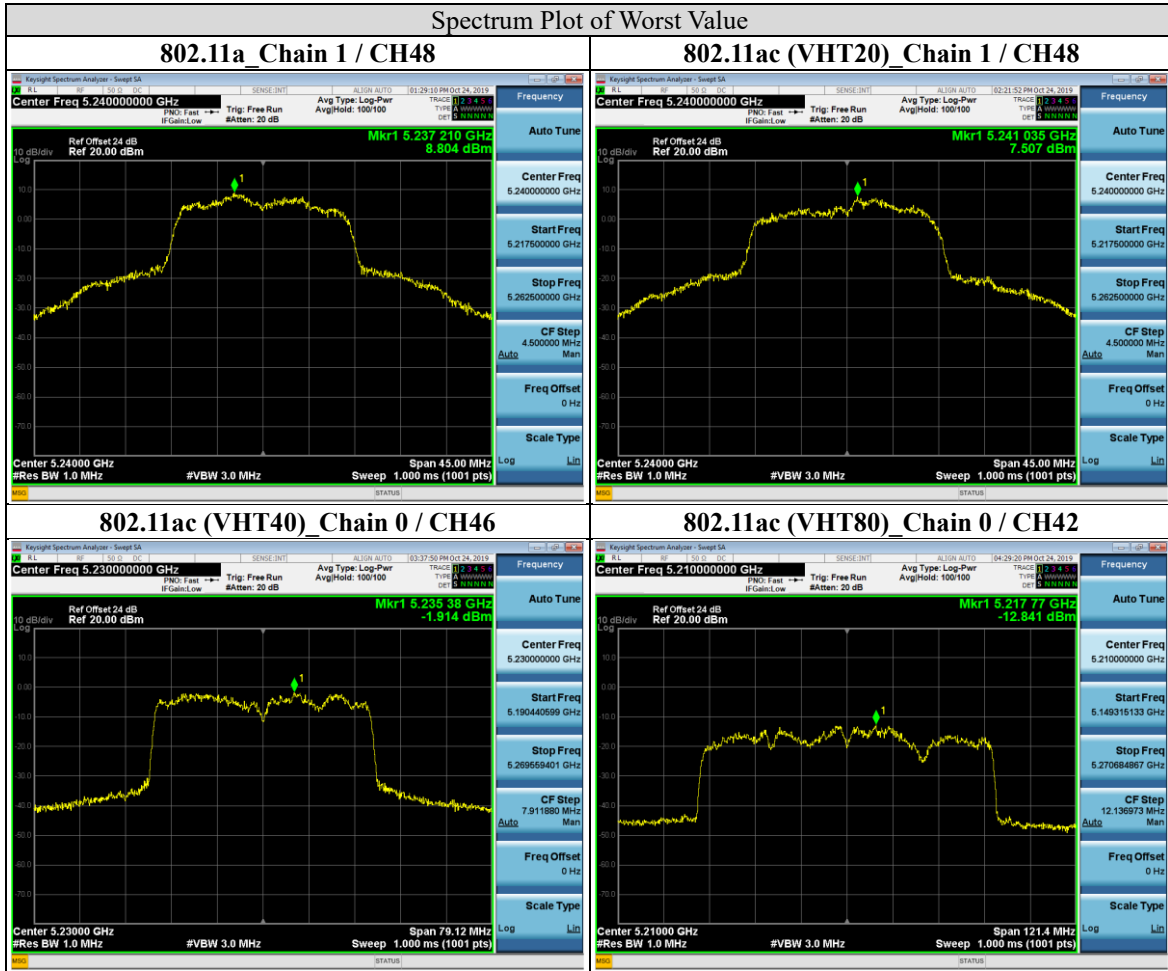
802.11ac (VHT80)

CHAN.	FREQ. (MHz)	PSD (dBm)		TOTAL PSD with duty factor (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
42	5210	-12.841	-13.605	-9.15	15.54	PASS

Note:

1. Method a) of power density measurement of KDB 662911 is using for calculating total power density.
Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 7.46 dBi > 6 dBi , so the limit shall be reduced.
3. Refer to section 6.6 for duty cycle spectrum plot.

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Beamforming Mode

802.11ac (VHT20)

CHAN.	FREQ. (MHz)	PSD (dBm)		TOTAL PSD with duty factor (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
36	5180	-5.566	-3.680	-0.57	15.54	PASS
44	5220	1.850	0.311	5.09	15.54	PASS
48	5240	3.060	2.743	6.85	15.54	PASS

Note:

1. Method a) of power density measurement of KDB 662911 is using for calculating total power density.
Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 7.46 dBi > 6 dBi , so the limit shall be reduced.
3. Refer to section 6.6 for duty cycle spectrum plot.

802.11ac (VHT40)

CHAN.	FREQ. (MHz)	PSD (dBm)		TOTAL PSD with duty factor (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
38	5190	-12.853	-13.676	-8.83	15.54	PASS
46	5230	-8.558	-7.776	-3.73	15.54	PASS

Note:

1. Method a) of power density measurement of KDB 662911 is using for calculating total power density.
Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 7.46 dBi > 6 dBi , so the limit shall be reduced.
3. Refer to section 6.6 for duty cycle spectrum plot.

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802.11ac (VHT80)

CHAN.	FREQ. (MHz)	PSD (dBm)		TOTAL PSD with duty factor (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
42	5210	-18.892	-20.266	-14.26	15.54	PASS

Note:

1. Method a) of power density measurement of KDB 662911 is using for calculating total power density.
Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 7.46 dBi > 6 dBi , so the limit shall be reduced.
3. Refer to section 6.6 for duty cycle spectrum plot.

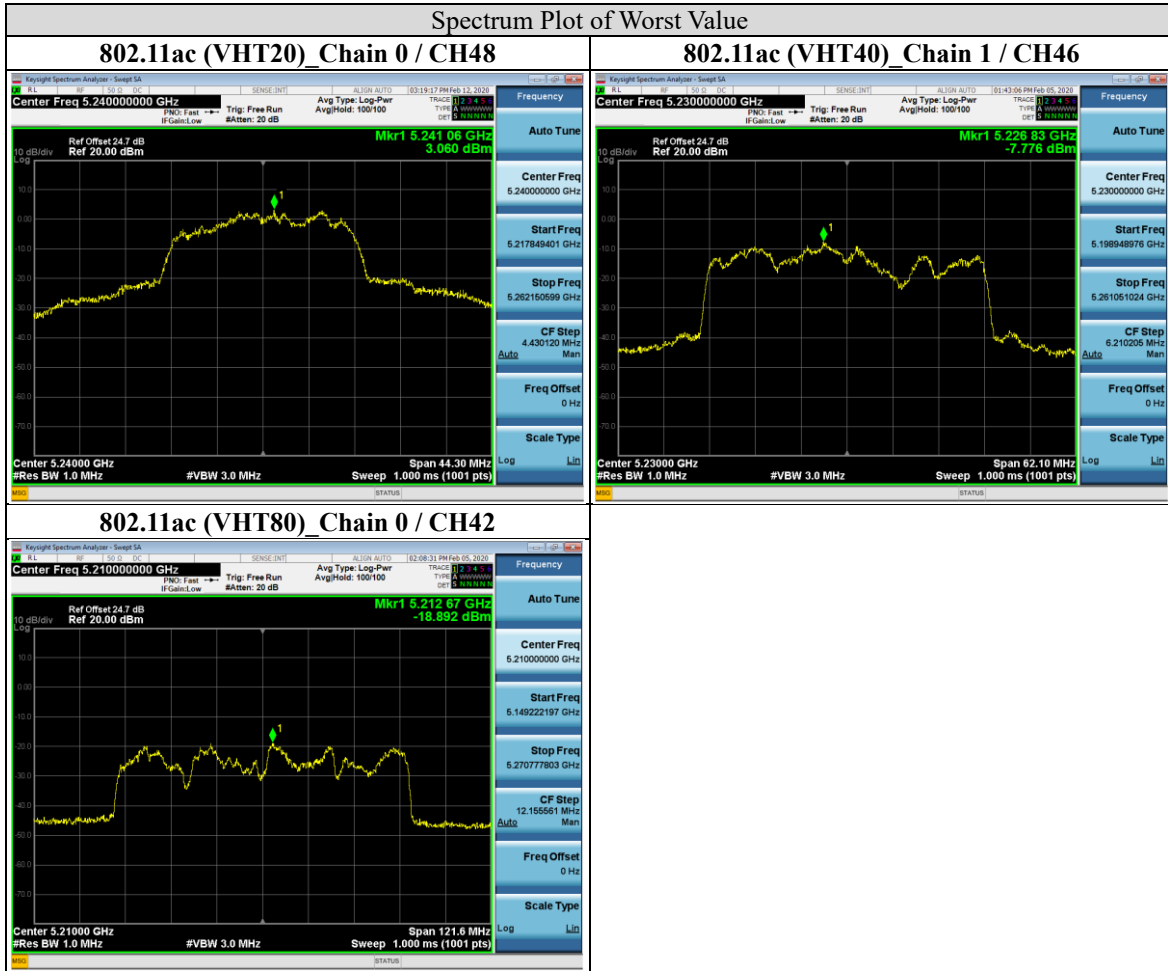
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For U-NII-3 Band

Non-Beamforming Mode

802.11a

TX Chain	Channel	Frequency (MHz)	PSD w/o BWCF (dBm/300 kHz)	PSD with BWCF (dBm/500 kHz)	10 log (N=2) dB	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	149	5745	0.79	3.01	3.01	6.18	28.54	Pass
	157	5785	0.45	2.67	3.01	5.84	28.54	Pass
	165	5825	0.064	2.28	3.01	5.45	28.54	Pass
1	149	5745	0.324	2.54	3.01	5.71	28.54	Pass
	157	5785	-0.516	1.70	3.01	4.87	28.54	Pass
	165	5825	1.086	3.31	3.01	6.48	28.54	Pass

Note:

1. Directional gain = 7.46 dBi > 6 dBi , so the limit shall be reduced.
2. Refer to section 6.6 for duty cycle spectrum plot.
3. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(500\text{ kHz}/300\text{kHz})$.

802.11ac (VHT20)

TX Chain	Channel	Frequency (MHz)	PSD w/o BWCF (dBm/300 kHz)	PSD with BWCF (dBm/500 kHz)	10 log (N=2) dB	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	149	5745	0.748	2.97	3.01	6.29	28.54	Pass
	157	5785	0.062	2.28	3.01	5.60	28.54	Pass
	165	5825	0.854	3.07	3.01	6.39	28.54	Pass
1	149	5745	-0.39	1.83	3.01	5.15	28.54	Pass
	157	5785	-0.275	1.95	3.01	5.27	28.54	Pass
	165	5825	0.269	2.49	3.01	5.81	28.54	Pass

Note:

1. Directional gain = 7.46 dBi > 6 dBi , so the limit shall be reduced.
2. Refer to section 6.6 for duty cycle spectrum plot.
3. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(500\text{ kHz}/300\text{kHz})$.

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802.11ac (VHT40)

TX Chain	Channel	Frequency (MHz)	PSD w/o BWCF (dBm/300 kHz)	PSD with BWCF (dBm/500 kHz)	10 log (N=2) dB	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	151	5755	-3.149	-0.93	3.01	2.66	28.54	Pass
	159	5795	-2.895	-0.68	3.01	2.92	28.54	Pass
1	151	5755	-3.041	-0.82	3.01	2.77	28.54	Pass
	159	5795	-2.355	-0.14	3.01	3.46	28.54	Pass

Note:

1. Directional gain = 7.46 dBi > 6 dBi , so the limit shall be reduced.
2. Refer to section 6.6 for duty cycle spectrum plot.
3. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(500 \text{ kHz}/300\text{kHz})$.

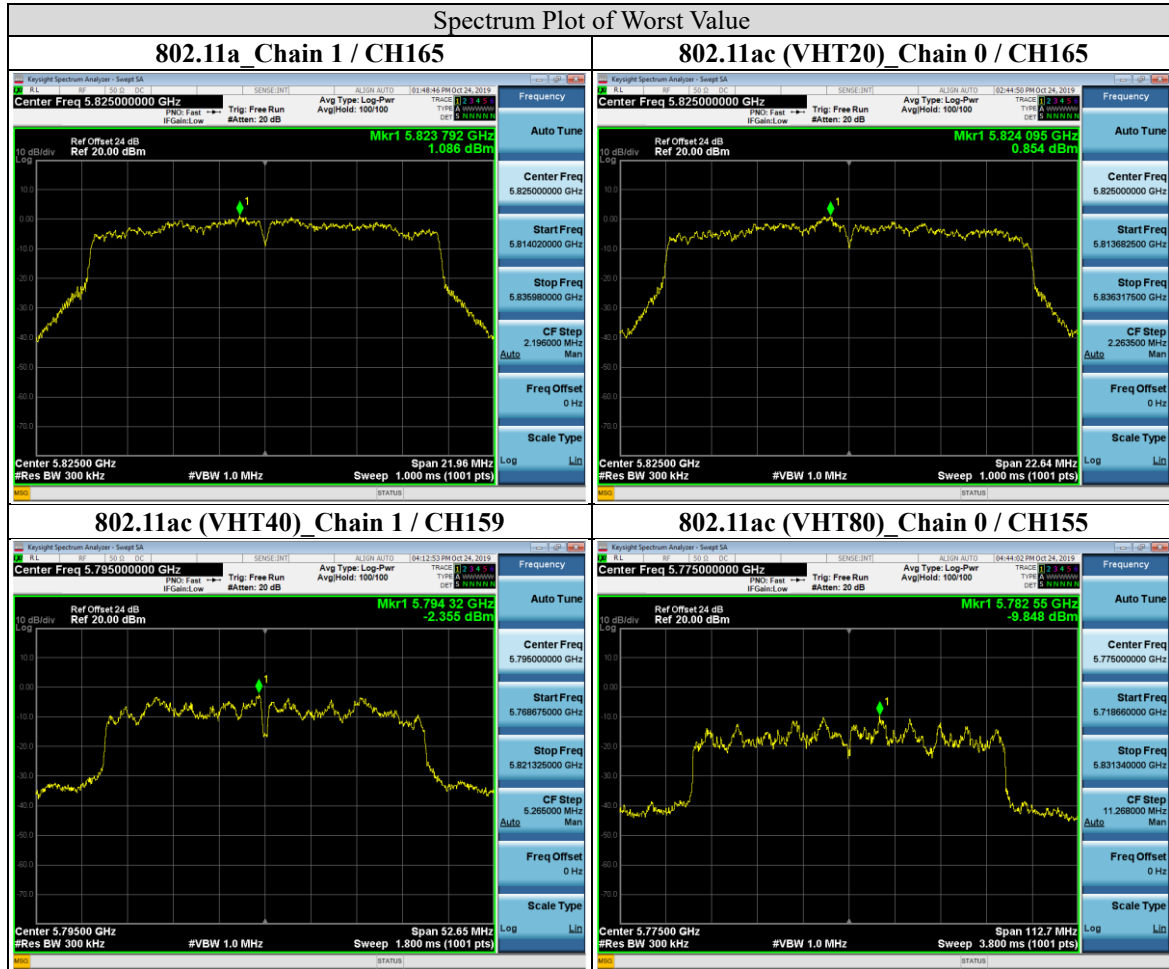
802.11ac (VHT80)

TX Chain	Channel	Frequency (MHz)	PSD w/o BWCF (dBm/300 kHz)	PSD with BWCF (dBm/500 kHz)	10 log (N=2) dB	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	155	5775	-9.848	-7.63	3.01	-3.57	28.54	Pass
1	155	5775	-12.038	-9.82	3.01	-5.76	28.54	Pass

Note:

1. Directional gain = 7.46 dBi > 6 dBi , so the limit shall be reduced.
2. Refer to section 6.6 for duty cycle spectrum plot.
3. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(500 \text{ kHz}/300\text{kHz})$.

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Beamforming Mode

802.11ac (VHT20)

TX Chain	Channel	Frequency (MHz)	PSD w/o BWCF (dBm/300 kHz)	PSD with BWCF (dBm/500 kHz)	10 log (N=2) dB	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	149	5745	-1.708	0.51	3.01	4.46	28.54	Pass
	157	5785	-3.027	-0.81	3.01	3.14	28.54	Pass
	165	5825	-2.419	-0.20	3.01	3.75	28.54	Pass
1	149	5745	-1.394	0.83	3.01	4.78	28.54	Pass
	157	5785	-2.342	-0.12	3.01	3.83	28.54	Pass
	165	5825	0.427	2.65	3.01	6.6	28.54	Pass

Note:

1. Directional gain = 7.46 dBi > 6 dBi , so the limit shall be reduced.
2. Refer to section 6.6 for duty cycle spectrum plot.
3. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(500\text{ kHz}/300\text{kHz})$.

802.11ac (VHT40)

TX Chain	Channel	Frequency (MHz)	PSD w/o BWCF (dBm/300 kHz)	PSD with BWCF (dBm/500 kHz)	10 log (N=2) dB	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	151	5755	-8.602	-6.38	3.01	-1.96	28.54	Pass
	159	5795	-10.255	-8.04	3.01	-3.62	28.54	Pass
1	151	5755	-11.194	-8.97	3.01	-4.55	28.54	Pass
	159	5795	-9.809	-7.59	3.01	-3.17	28.54	Pass

Note:

1. Directional gain = 7.46 dBi > 6 dBi , so the limit shall be reduced.
2. Refer to section 6.6 for duty cycle spectrum plot.
3. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(500\text{ kHz}/300\text{kHz})$.

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802.11ac (VHT80)

TX Chain	Channel	Frequency (MHz)	PSD w/o BWCF (dBm/300 kHz)	PSD with BWCF (dBm/500 kHz)	10 log (N=2) dB	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	155	5775	-25.544	-23.32	3.01	-18.05	28.54	Pass
1	155	5775	-24.093	-21.87	3.01	-16.6	28.54	Pass

Note:

1. Directional gain = 7.46 dBi > 6 dBi , so the limit shall be reduced.
2. Refer to section 1.1 for duty cycle spectrum plot.
3. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(500 \text{ kHz}/300\text{kHz})$.

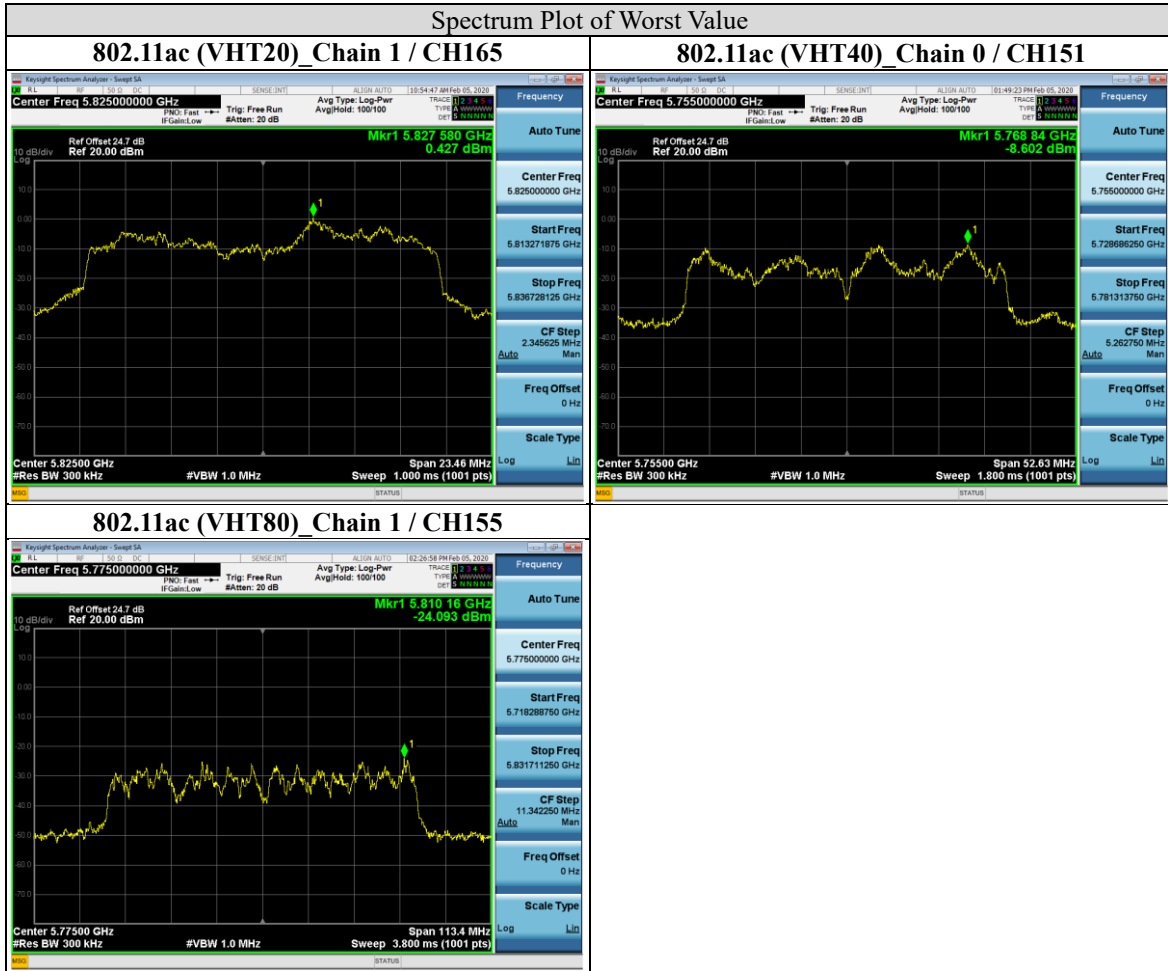
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9.6. Frequency Stability

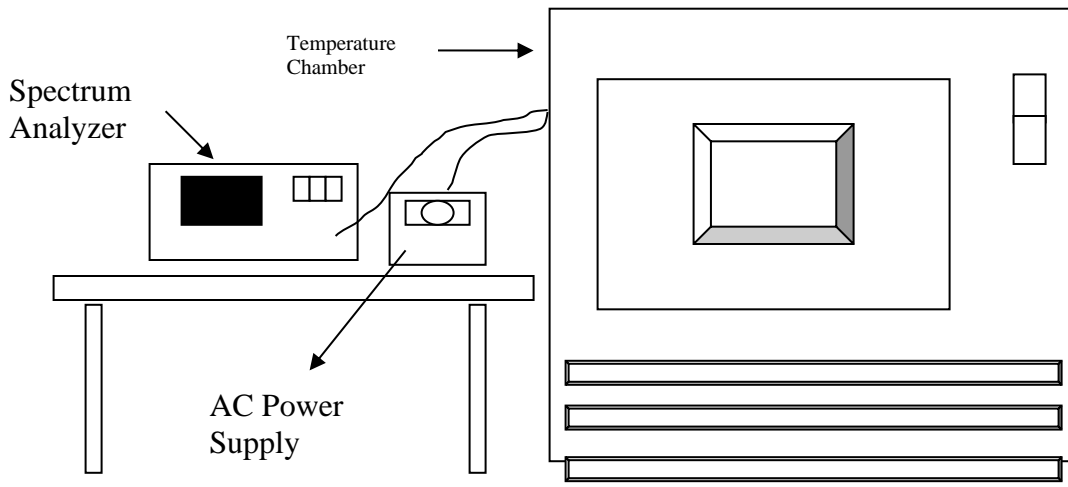
Requirements

The frequency of the carrier signal shall be maintained within band of operation.

Test procedure

- The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
- Turn the EUT on and couple its output to a spectrum analyzer.
- Turn the EUT off and set the chamber to the highest temperature specified.
- Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 Minutes.
- Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
- The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 Minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

Test Setup





Test Data

Non-Beamforming Mode

Frequency Stability Versus Temp.									
Operating Frequency: 5180 MHz									
TEMP. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Freq. Drift (ppm)	Measured Frequency (MHz)	Freq. Drift (ppm)	Measured Frequency (MHz)	Freq. Drift (ppm)	Measured Frequency (MHz)	Freq. Drift (ppm)
50	120	5179.95	-9.62	5179.965	-6.71	5179.968	-6.09	5180.023	4.44
40	120	5179.99	-1.86	5179.997	-0.68	5179.981	-3.60	5179.974	-5.02
30	120	5179.951	-9.40	5180.05	9.61	5180.033	6.31	5179.964	-6.94
20	120	5179.98	-3.86	5180.02	3.86	5179.99	-1.93	5179.976	-4.63
10	120	5180.019	3.64	5180.023	4.49	5180.04	7.68	5180.032	6.18
0	120	5180.005	0.97	5179.974	-5.12	5179.974	-5.02	5180.017	3.21
-10	120	5179.965	-6.78	5180.031	5.92	5179.963	-7.08	5179.983	-3.25
-20	120	5180.023	4.49	5179.991	-1.81	5179.968	-6.19	5179.965	-6.71
-30	120	5180.006	1.18	5179.989	-2.17	5179.987	-2.46	5179.98	-3.96
TEMP. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Freq. Drift (ppm)	Measured Frequency (MHz)	Freq. Drift (ppm)	Measured Frequency (MHz)	Freq. Drift (ppm)	Measured Frequency (MHz)	Freq. Drift (ppm)
20	138	5179.992	-1.61	5179.974	-5.02	5179.976	-4.59	5180.027	5.13
20	102	5179.99	-1.88	5180.043	8.23	5180.016	3.10	5179.971	-5.56

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Beamforming Mode

Frequency Stability Versus Temp.									
Operating Frequency: 5180 MHz									
TEMP. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Freq. Drift (ppm)	Measured Frequency (MHz)	Freq. Drift (ppm)	Measured Frequency (MHz)	Freq. Drift (ppm)	Measured Frequency (MHz)	Freq. Drift (ppm)
50	120	5180.043	8.22	5180.04	7.65	5179.971	-5.67	5180.077	14.96
40	120	5179.957	-8.32	5180.032	6.12	5179.998	-0.45	5179.924	-14.73
30	120	5180.002	0.46	5179.952	-9.31	5180.043	8.28	5180.072	13.95
20	120	5179.944	-10.74	5180.047	9.15	5179.948	-9.97	5179.986	-2.77
10	120	5180.027	5.20	5180.01	1.98	5180.064	12.27	5179.998	-0.48
0	120	5179.929	-13.65	5179.94	-11.64	5179.938	-12.04	5180.032	6.16
-10	120	5179.92	-15.44	5180.045	8.76	5180.05	9.70	5180.068	13.21
-20	120	5179.941	-11.38	5179.962	-7.40	5180.059	11.40	5180.023	4.53
-30	120	5179.968	-6.24	5180.041	7.93	5180.03	5.74	5180.034	6.51
TEMP. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Freq. Drift (ppm)	Measured Frequency (MHz)	Freq. Drift (ppm)	Measured Frequency (MHz)	Freq. Drift (ppm)	Measured Frequency (MHz)	Freq. Drift (ppm)
20	138	5180.042	8.17	5179.986	-2.68	5180.042	8.18	5179.961	-7.44
20	102	5179.984	-3.16	5179.969	-6.08	5179.976	-4.72	5179.962	-7.37

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9.7. Radiated Spurious Emission

Requirements

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

Frequency(MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

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Limits of unwanted emission out of the restricted bands

Applicable To		Limit	
789033 D02 General UNII Test Procedure New Rules v02r01		Field Strength at 3m	
		PK:74 (dBμV/m)	AV:54 (dBμV/m)
Frequency Band	Applicable To	EIRP Limit	Equivalent Field Strength at 3m
5150~5250 MHz	15.407(b)(1)	PK:-27 (dBm/MHz)	PK:68.2(dBμV/m)
5725~5850 MHz	15.407(b)(4)(i)	PK:-27 (dBm/MHz) *1 PK:10 (dBm/MHz) *2 PK:15.6 (dBm/MHz) *3 PK:27 (dBm/MHz) *4	PK: 68.2(dBμV/m) *1 PK:105.2 (dBμV/m) *2 PK: 110.8(dBμV/m) *3 PK:122.2 (dBμV/m) *4
*1 beyond 75 MHz or more above of the band edge. *2 below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above. *3 below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above. *4 from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.			

Note:

The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000\sqrt{30P}}{3} \mu\text{V/m, where P is the eirp (Watts).$$

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Test Procedures

[For 9 kHz ~ 30 MHz]

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. For measurement below 30MHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

[For above 30 MHz]

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
- f. The test-receiver system was set to peak and average detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

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Note:

- The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
- The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
- The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.

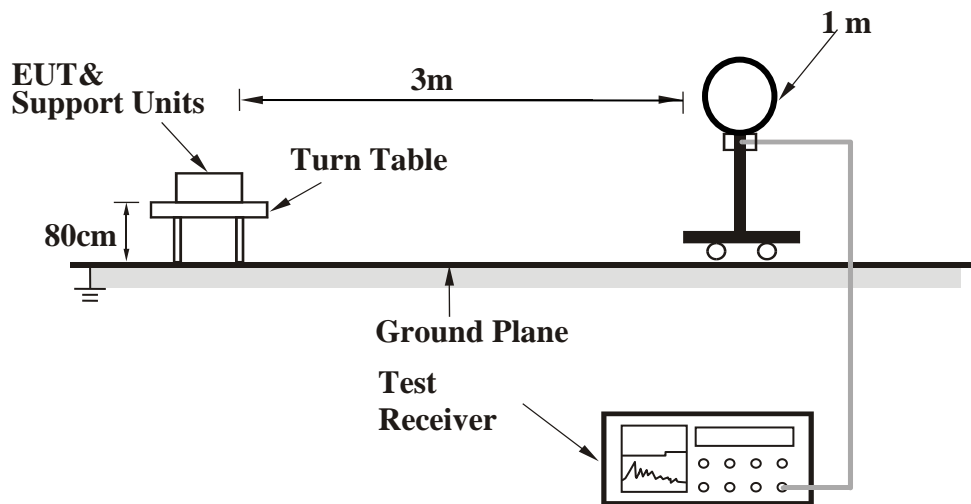
Configuration	Non-Beamforming Mode		Beamforming Mode	
	Average		Average	
	RBW	VBW	RBW	VBW
802.11a	1MHz	1 kHz	1MHz	-
802.11ac (VHT20)		2 kHz		3 kHz
802.11ac (VHT40)		3 kHz		5.1 kHz
802.11ac (VHT80)		6.2 kHz		12 kHz

Note: Refer to section 6.6 for duty cycle.

- All modes of operation were investigated (includes all external accessories) and the worst-case emissions are reported.

Test Setup

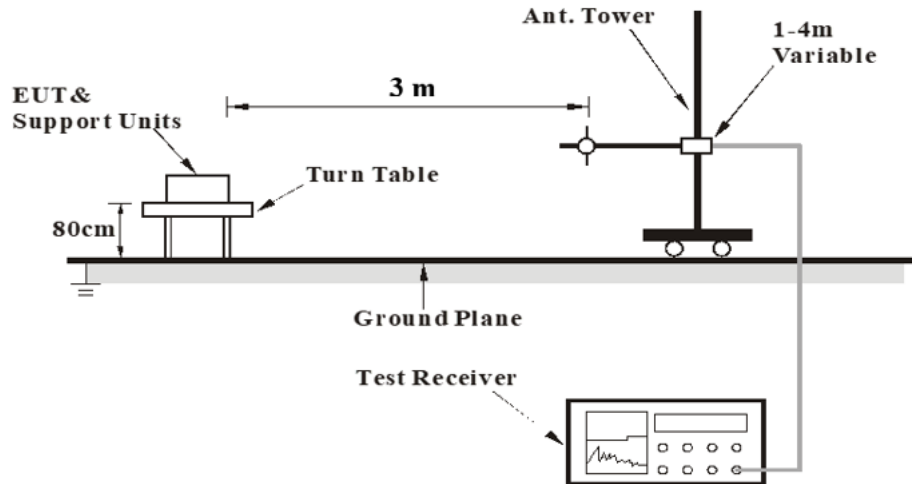
<Frequency Range 9 kHz ~ 30 MHz>



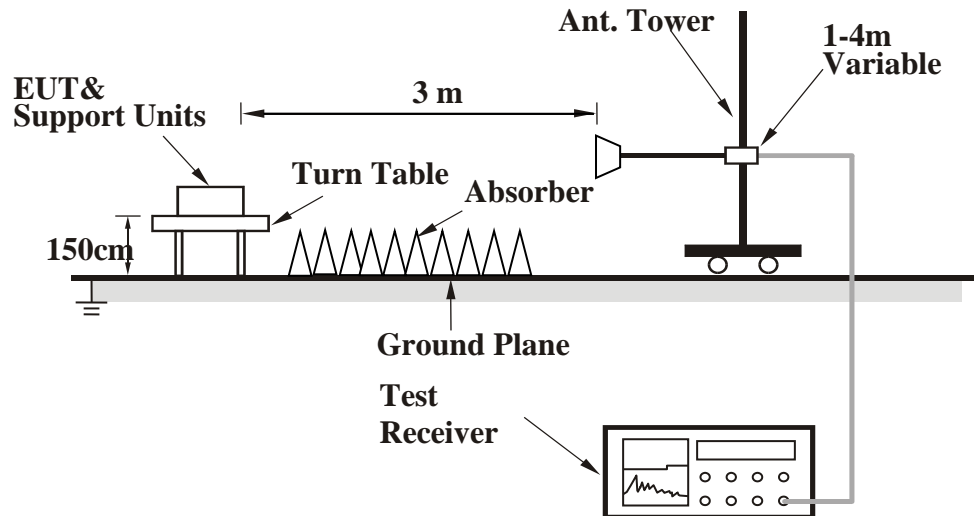
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<Frequency Range 30 MHz ~ 1 GHz >



<Frequency Range above 1 GHz>



For the actual test configuration, please refer to the Setup Configurations.



Test Data

Above 1GHz Data

Non-Beamforming Mode

802.11a

EUT Test Condition		Measurement Detail	
Channel	Channel 36	Frequency Range	1 GHz ~ 40 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	5138.290	52.45	7.75	60.20	74.00	-13.80	peak
@	5180.000	96.65	7.77	104.42	-	-	peak
-	5135.650	41.24	7.75	48.99	54.00	-5.01	AVG
@	5180.000	88.96	7.77	96.73	-	-	AVG
#	3453.100	53.55	-6.36	47.19	68.20	-21.01	peak
#	10360.000	44.15	8.87	53.02	68.20	-15.18	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	5147.770	57.73	7.76	65.49	74.00	-8.51	peak
@	5180.000	107.61	7.77	115.38	-	-	peak
-	5149.500	45.60	7.76	53.36	54.00	-0.64	AVG
@	5180.000	99.81	7.77	107.58	-	-	AVG
#	3453.100	54.93	-6.36	48.57	68.20	-19.63	peak
#	10360.000	46.32	8.87	55.19	68.20	-13.01	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "#": The radiated frequency is out of the restricted band.
6. The other emission levels were very low against the limit.

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EUT Test Condition		Measurement Detail	
Channel	Channel 44	Frequency Range	1 GHz ~ 40 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	5071.970	52.96	7.65	60.61	74.00	-13.39	peak
@	5220.000	100.55	7.67	108.22	-	-	peak
-	5108.470	41.22	7.73	48.95	54.00	-5.05	AVG
@	5220.000	91.96	7.67	99.63	-	-	AVG
#	3480.400	52.32	-6.13	46.19	68.20	-22.01	peak
#	10440.000	46.15	9.07	55.22	68.20	-12.98	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	5134.850	56.42	7.75	64.17	74.00	-9.83	peak
@	5220.000	109.56	7.67	117.23	-	-	peak
-	5140.200	45.64	7.75	53.39	54.00	-0.61	AVG
@	5220.000	101.55	7.67	109.22	-	-	AVG
#	3455.700	54.82	-6.33	48.49	68.20	-19.71	peak
#	10440.000	52.30	9.07	61.37	68.20	-6.83	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "#": The radiated frequency is out of the restricted band.
6. The other emission levels were very low against the limit.

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Doc No: 17-EM-F0878 / 5.0



EUT Test Condition		Measurement Detail	
Channel	Channel 48	Frequency Range	1 GHz ~ 40 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	5142.010	52.66	7.75	60.41	74.00	-13.59	peak
@	5240.000	103.54	7.56	111.10	-	-	peak
-	5114.020	41.17	7.74	48.91	54.00	-5.09	AVG
@	5240.000	96.23	7.56	103.79	-	-	AVG
#	10480.000	47.56	9.03	56.59	68.20	-11.61	peak
-	15720.000	52.17	12.34	64.51	74.00	-9.49	peak
-	15720.000	41.20	12.34	53.54	54.00	-0.46	AVG
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	5137.590	55.25	7.75	63.00	74.00	-11.00	peak
@	5240.000	111.26	7.56	118.82	-	-	peak
-	5150.000	44.01	7.76	51.77	54.00	-2.23	AVG
@	5240.000	103.95	7.56	111.51	-	-	AVG
#	10480.000	52.06	9.03	61.09	68.20	-7.11	peak
-	15720.000	47.83	12.34	60.17	74.00	-13.83	peak
-	15720.000	37.47	12.34	49.81	54.00	-4.19	AVG

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "#": The radiated frequency is out of the restricted band.
6. The other emission levels were very low against the limit.

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EUT Test Condition		Measurement Detail	
Channel	Channel 149	Frequency Range	1 GHz ~ 40 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
#	5626.850	51.55	7.92	59.47	68.20	-8.73	peak
-	5712.733	53.22	8.16	61.38	108.77	-47.39	peak
@	5745.000	98.96	8.38	107.34	-	-	peak
@	5745.000	90.11	8.38	98.49	-	-	AVG
-	11490.000	53.32	9.77	63.09	74.00	-10.91	peak
-	11490.000	42.58	9.77	52.35	54.00	-1.65	AVG
#	17235.000	39.66	15.75	55.41	68.20	-12.79	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
#	5626.267	53.00	7.92	60.92	68.20	-7.28	peak
-	5711.500	58.09	8.14	66.23	108.42	-42.19	peak
@	5745.000	108.51	8.38	116.89	-	-	peak
@	5745.000	99.90	8.38	108.28	-	-	AVG
-	11490.000	54.93	9.77	64.70	74.00	-9.30	peak
-	11490.000	43.51	9.77	53.28	54.00	-0.72	AVG
#	17235.000	37.37	15.75	53.12	68.20	-15.08	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "#": The radiated frequency is out of the restricted band.
6. The other emission levels were very low against the limit.

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EUT Test Condition		Measurement Detail	
Channel	Channel 157	Frequency Range	1 GHz ~ 40 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
#	5608.117	50.86	7.91	58.77	68.20	-9.43	peak
-	5679.650	50.55	8.02	58.57	90.14	-31.57	peak
@	5785.000	98.60	8.64	107.24	-	-	peak
@	5785.000	85.83	8.64	94.47	-	-	AVG
-	5907.817	51.30	8.82	60.12	80.92	-20.80	peak
#	5970.333	50.60	8.90	59.50	68.20	-8.70	peak
-	11567.700	53.86	9.66	63.52	74.00	-10.48	peak
-	11567.700	42.90	9.66	52.56	54.00	-1.44	AVG
#	17355.000	32.89	16.71	49.60	68.20	-18.60	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
#	5623.400	53.52	7.91	61.43	68.20	-6.77	peak
-	5677.233	54.51	8.00	62.51	88.35	-25.84	peak
@	5785.000	107.58	8.64	116.22	-	-	peak
@	5785.000	98.52	8.64	107.16	-	-	AVG
-	5913.750	53.92	8.82	62.74	76.53	-13.79	peak
#	5962.917	51.64	8.89	60.53	68.20	-7.67	peak
-	11570.000	54.33	9.65	63.98	74.00	-10.02	peak
-	11570.000	43.68	9.65	53.33	54.00	-0.67	AVG
#	17355.000	33.74	16.71	50.45	68.20	-17.75	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "#": The radiated frequency is out of the restricted band.
6. The other emission levels were very low against the limit.

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EUT Test Condition		Measurement Detail	
Channel	Channel 165	Frequency Range	1 GHz ~ 40 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
@	5825.000	97.97	8.76	106.73	-	-	peak
@	5825.000	88.64	8.76	97.40	-	-	AVG
-	5922.100	51.34	8.83	60.17	70.35	-10.18	peak
#	5978.867	50.89	8.92	59.81	68.20	-8.39	peak
-	11650.000	54.60	9.40	64.00	74.00	-10.00	peak
-	11650.000	43.81	9.40	53.21	54.00	-0.79	AVG
#	17475.000	36.62	17.67	54.29	68.20	-13.91	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
@	5825.000	107.23	8.76	115.99	-	-	peak
@	5825.000	97.90	8.76	106.66	-	-	AVG
-	5886.850	53.14	8.80	61.94	96.43	-34.49	peak
#	5972.617	51.92	8.91	60.83	68.20	-7.37	peak
-	11650.000	55.11	9.40	64.51	74.00	-9.49	peak
-	11650.000	44.01	9.40	53.41	54.00	-0.59	AVG
#	17475.000	36.10	17.67	53.77	68.20	-14.43	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "#": The radiated frequency is out of the restricted band.
6. The other emission levels were very low against the limit.

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802.11ac (VHT20)

EUT Test Condition		Measurement Detail	
Channel	Channel 36	Frequency Range	1 GHz ~ 40 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	5068.970	53.22	7.66	60.88	74.00	-13.12	peak
@	5180.000	94.75	7.77	102.52	-	-	peak
-	5085.550	41.10	7.69	48.79	54.00	-5.21	AVG
@	5180.000	86.22	7.77	93.99	-	-	AVG
#	3453.100	53.02	-6.36	46.66	68.20	-21.54	peak
#	10360.000	44.13	8.87	53.00	68.20	-15.20	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	5092.550	54.83	7.72	62.55	74.00	-11.45	peak
@	5180.000	105.41	7.77	113.18	-	-	peak
-	5150.000	45.38	7.76	53.14	54.00	-0.86	AVG
@	5180.000	97.69	7.77	105.46	-	-	AVG
#	3455.700	55.12	-6.33	48.79	68.20	-19.41	peak
#	10360.000	47.66	8.87	56.53	68.20	-11.67	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "#": The radiated frequency is out of the restricted band.
6. The other emission levels were very low against the limit.

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EUT Test Condition		Measurement Detail	
Channel	Channel 44	Frequency Range	1 GHz ~ 40 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	5094.800	53.04	7.72	60.76	74.00	-13.24	peak
@	5220.000	98.03	7.67	105.70	-	-	peak
-	5107.240	41.46	7.73	49.19	54.00	-4.81	AVG
@	5220.000	89.85	7.67	97.52	-	-	AVG
#	3480.400	54.40	-6.13	48.27	68.20	-19.93	peak
#	10440.000	47.83	9.07	56.90	68.20	-11.30	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	5139.510	55.48	7.75	63.23	74.00	-10.77	peak
@	5220.000	108.04	7.67	115.71	-	-	peak
-	5143.940	45.74	7.75	53.49	54.00	-0.51	AVG
@	5220.000	99.29	7.67	106.96	-	-	AVG
#	3455.700	54.87	-6.33	48.54	68.20	-19.66	peak
#	10440.000	50.04	9.07	59.11	68.20	-9.09	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "#": The radiated frequency is out of the restricted band.
6. The other emission levels were very low against the limit.

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Doc No: 17-EM-F0878 / 5.0



EUT Test Condition		Measurement Detail	
Channel	Channel 48	Frequency Range	1 GHz ~ 40 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	5030.640	52.81	7.48	60.29	74.00	-13.71	peak
@	5240.000	101.55	7.56	109.11	-	-	peak
-	5150.000	40.66	7.76	48.42	54.00	-5.58	AVG
@	5240.000	93.94	7.56	101.50	-	-	AVG
#	10480.000	49.57	9.03	58.60	68.20	-9.60	peak
-	15720.000	52.80	12.34	65.14	74.00	-8.86	peak
-	15720.000	40.60	12.34	52.94	54.00	-1.06	AVG
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	5148.240	54.75	7.76	62.51	74.00	-11.49	peak
@	5240.000	110.00	7.56	117.56	-	-	peak
-	5150.000	43.97	7.76	51.73	54.00	-2.27	AVG
@	5240.000	101.79	7.56	109.35	-	-	AVG
#	10480.000	56.94	9.03	65.97	68.20	-2.23	peak
-	15720.000	47.24	12.34	59.58	74.00	-14.42	peak
-	15720.000	35.90	12.34	48.24	54.00	-5.76	AVG

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "#": The radiated frequency is out of the restricted band.
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Doc No: 17-EM-F0878 / 5.0



EUT Test Condition		Measurement Detail	
Channel	Channel 149	Frequency Range	1 GHz ~ 40 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
#	5601.367	51.22	7.90	59.12	68.20	-9.08	peak
-	5678.400	50.44	8.01	58.45	89.22	-30.77	peak
@	5745.000	98.79	8.38	107.17	-	-	peak
@	5745.000	88.83	8.38	97.21	-	-	AVG
-	11490.000	53.56	9.77	63.33	74.00	-10.67	peak
-	11490.000	42.78	9.77	52.55	54.00	-1.45	AVG
#	17235.000	38.93	15.75	54.68	68.20	-13.52	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
#	5602.383	55.88	7.90	63.78	68.20	-4.42	peak
-	5655.317	54.39	7.95	62.34	72.13	-9.79	peak
@	5745.000	107.99	8.38	116.37	-	-	peak
@	5745.000	97.07	8.38	105.45	-	-	AVG
-	11490.000	53.75	9.77	63.52	74.00	-10.48	peak
-	11490.000	43.54	9.77	53.31	54.00	-0.69	AVG
#	17235.000	38.07	15.75	53.82	68.20	-14.38	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "#": The radiated frequency is out of the restricted band.
6. The other emission levels were very low against the limit.

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EUT Test Condition		Measurement Detail	
Channel	Channel 157	Frequency Range	1 GHz ~ 40 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
#	5609.983	50.93	7.91	58.84	68.20	-9.36	peak
-	5674.800	50.45	8.00	58.45	86.55	-28.10	peak
@	5785.000	98.08	8.64	106.72	-	-	peak
@	5785.000	88.37	8.64	97.01	-	-	AVG
-	5909.117	51.48	8.82	60.30	79.95	-19.65	peak
#	5939.533	50.91	8.83	59.74	68.20	-8.46	peak
-	11570.000	53.19	9.65	62.84	74.00	-11.16	peak
-	11570.000	42.87	9.65	52.52	54.00	-1.48	AVG
#	17355.000	35.20	16.71	51.91	68.20	-16.29	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
#	5638.383	54.51	7.93	62.44	68.20	-5.76	peak
-	5668.983	55.22	7.99	63.21	82.25	-19.04	peak
@	5785.000	107.45	8.64	116.09	-	-	peak
@	5785.000	97.04	8.64	105.68	-	-	AVG
-	5884.050	53.15	8.80	61.95	98.50	-36.55	peak
#	5942.283	52.31	8.84	61.15	68.20	-7.05	peak
-	11570.000	53.83	9.65	63.48	74.00	-10.52	peak
-	11570.000	43.63	9.65	53.28	54.00	-0.72	AVG
#	17355.000	33.78	16.71	50.49	68.20	-17.71	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "#": The radiated frequency is out of the restricted band.
6. The other emission levels were very low against the limit.

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EUT Test Condition		Measurement Detail	
Channel	Channel 165	Frequency Range	1 GHz ~ 40 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
@	5825.000	98.55	8.76	107.31	-	-	peak
@	5825.000	88.10	8.76	96.86	-	-	AVG
-	5919.317	50.51	8.83	59.34	72.41	-13.07	peak
#	5969.700	50.83	8.90	59.73	68.20	-8.47	peak
-	11650.000	53.33	9.40	62.73	74.00	-11.27	peak
-	11650.000	42.91	9.40	52.31	54.00	-1.69	AVG
#	17475.000	37.80	17.67	55.47	68.20	-12.73	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
@	5825.000	106.85	8.76	115.61	-	-	peak
@	5825.000	96.74	8.76	105.50	-	-	AVG
-	5880.983	54.45	8.80	63.25	100.77	-37.52	peak
#	5956.017	52.28	8.86	61.14	68.20	-7.06	peak
-	11650.000	54.61	9.40	64.01	74.00	-9.99	peak
-	11650.000	43.92	9.40	53.32	54.00	-0.68	AVG
#	17475.000	38.85	17.67	56.52	68.20	-11.68	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "#": The radiated frequency is out of the restricted band.
6. The other emission levels were very low against the limit.

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Doc No: 17-EM-F0878 / 5.0



802.11ac (VHT40)

EUT Test Condition		Measurement Detail	
Channel	Channel 38	Frequency Range	1 GHz ~ 40 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	5063.280	53.10	7.64	60.74	74.00	-13.26	peak
@	5190.000	90.28	7.77	98.05	-	-	peak
-	5150.000	40.75	7.76	48.51	54.00	-5.49	AVG
@	5190.000	80.97	7.77	88.74	-	-	AVG
#	3459.600	54.88	-6.29	48.59	68.20	-19.61	peak
#	10380.000	39.02	8.98	48.00	68.20	-20.20	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	5145.120	55.20	7.75	62.95	74.00	-11.05	peak
@	5190.000	100.88	7.77	108.65	-	-	peak
-	5150.000	45.45	7.76	53.21	54.00	-0.79	AVG
@	5190.000	91.64	7.77	99.41	-	-	AVG
#	3460.900	54.33	-6.28	48.05	68.20	-20.15	peak
#	10380.000	40.06	8.98	49.04	68.20	-19.16	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "#": The radiated frequency is out of the restricted band.
6. The other emission levels were very low against the limit.

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EUT Test Condition		Measurement Detail	
Channel	Channel 46	Frequency Range	1 GHz ~ 40 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	5070.480	52.61	7.65	60.26	74.00	-13.74	peak
@	5230.000	95.09	7.62	102.71	-	-	peak
-	5127.240	41.28	7.74	49.02	54.00	-4.98	AVG
@	5230.000	86.69	7.62	94.31	-	-	AVG
#	3486.900	53.41	-6.06	47.35	68.20	-20.85	peak
#	10460.000	44.63	9.04	53.67	68.20	-14.53	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	5149.050	56.65	7.76	64.41	74.00	-9.59	peak
@	5230.000	105.34	7.62	112.96	-	-	peak
-	5150.000	45.49	7.76	53.25	54.00	-0.75	AVG
@	5230.000	96.51	7.62	104.13	-	-	AVG
#	3455.700	54.27	-6.33	47.94	68.20	-20.26	peak
#	10460.000	46.99	9.04	56.03	68.20	-12.17	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "#": The radiated frequency is out of the restricted band.
6. The other emission levels were very low against the limit.

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EUT Test Condition		Measurement Detail	
Channel	Channel 151	Frequency Range	1 GHz ~ 40 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
#	5600.817	51.32	7.90	59.22	68.20	-8.98	peak
-	5681.617	57.34	8.02	65.36	91.60	-26.24	peak
@	5755.000	98.89	8.43	107.32	-	-	peak
@	5755.000	87.90	8.43	96.33	-	-	AVG
-	11510.000	53.74	9.76	63.50	74.00	-10.50	peak
-	11510.000	42.54	9.76	52.30	54.00	-1.70	AVG
#	17265.000	38.74	15.98	54.72	68.20	-13.48	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
#	5643.350	57.80	7.93	65.73	68.20	-2.47	peak
-	5682.267	71.30	8.02	79.32	92.08	-12.76	peak
@	5755.000	106.16	8.43	114.59	-	-	peak
@	5755.000	95.27	8.43	103.70	-	-	AVG
-	11510.000	55.49	9.76	65.25	74.00	-8.75	peak
-	11510.000	43.47	9.76	53.23	54.00	-0.77	AVG
#	17265.000	39.31	15.98	55.29	68.20	-12.91	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "#": The radiated frequency is out of the restricted band.
6. The other emission levels were very low against the limit.

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EUT Test Condition		Measurement Detail	
Channel	Channel 159	Frequency Range	1 GHz ~ 40 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
@	5795.000	97.78	8.71	106.49	-	-	peak
@	5795.000	87.40	8.71	96.11	-	-	AVG
-	5906.050	50.78	8.81	59.59	82.22	-22.63	peak
#	5928.800	51.42	8.83	60.25	68.20	-7.95	peak
-	11590.000	53.41	9.61	63.02	74.00	-10.98	peak
-	11590.000	42.48	9.61	52.09	54.00	-1.91	AVG
#	17385.000	35.32	16.95	52.27	68.20	-15.93	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
@	5795.000	105.85	8.71	114.56	-	-	peak
@	5795.000	95.12	8.71	103.83	-	-	AVG
-	5901.917	57.41	8.81	66.22	85.28	-19.06	peak
#	5938.600	52.44	8.83	61.27	68.20	-6.93	peak
-	11590.000	55.28	9.61	64.89	74.00	-9.11	peak
-	11590.000	43.52	9.61	53.13	54.00	-0.87	AVG
#	17385.000	33.64	16.95	50.59	68.20	-17.61	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "#": The radiated frequency is out of the restricted band.
6. The other emission levels were very low against the limit.

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802.11ac (VHT80)

EUT Test Condition		Measurement Detail	
Channel	Channel 42	Frequency Range	1 GHz ~ 40 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	5102.830	52.45	7.73	60.18	74.00	-13.82	peak
@	5210.000	85.46	7.72	93.18	-	-	peak
-	5150.000	40.72	7.76	48.48	54.00	-5.52	AVG
@	5210.000	76.39	7.72	84.11	-	-	AVG
#	3473.900	53.89	-6.18	47.71	68.20	-20.49	peak
#	10420.000	37.87	9.08	46.95	68.20	-21.25	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	5150.000	56.17	7.76	63.93	74.00	-10.07	peak
@	5210.000	96.44	7.72	104.16	-	-	peak
-	5150.000	46.05	7.76	53.81	54.00	-0.19	AVG
@	5210.000	86.67	7.72	94.39	-	-	AVG
#	3473.900	53.96	-6.18	47.78	68.20	-20.42	peak
#	10420.000	37.04	9.08	46.12	68.20	-22.08	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "#": The radiated frequency is out of the restricted band.
6. The other emission levels were very low against the limit.

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EUT Test Condition		Measurement Detail	
Channel	Channel 155	Frequency Range	1 GHz ~ 40 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
#	5606.967	54.50	7.91	62.41	68.20	-5.79	peak
-	5674.000	55.21	8.00	63.21	85.96	-22.75	peak
@	5775.000	93.99	8.57	102.56	-	-	peak
@	5775.000	83.86	8.57	92.43	-	-	AVG
-	11550.000	48.05	9.68	57.73	74.00	-16.27	peak
-	11550.000	37.36	9.68	47.04	54.00	-6.96	AVG
#	17325.000	33.04	16.47	49.51	68.20	-18.69	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
#	5649.483	59.66	7.94	67.60	68.20	-0.60	peak
-	5682.867	69.78	8.03	77.81	92.52	-14.71	peak
@	5775.000	100.38	8.57	108.95	-	-	peak
@	5775.000	90.59	8.57	99.16	-	-	AVG
-	11550.000	49.49	9.68	59.17	74.00	-14.83	peak
-	11550.000	38.91	9.68	48.59	54.00	-5.41	AVG
#	17325.000	32.68	16.47	49.15	68.20	-19.05	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "#": The radiated frequency is out of the restricted band.
6. The other emission levels were very low against the limit.

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Doc No: 17-EM-F0878 / 5.0



Beamforming Mode

802.11ac (VHT20)

EUT Test Condition		Measurement Detail	
Channel	Channel 36	Frequency Range	1 GHz ~ 40 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	5131.960	46.64	7.80	54.44	74.00	-19.56	peak
@	5180.000	95.26	7.81	103.07	-	-	peak
-	5150.000	33.12	7.86	40.98	54.00	-13.02	AVG
@	5180.000	84.15	7.81	91.96	-	-	AVG
#	10360.000	41.32	8.75	50.07	68.20	-18.13	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	5150.000	59.53	7.86	67.39	74.00	-6.61	peak
@	5180.000	106.29	7.81	114.10	-	-	peak
-	5150.000	45.46	7.86	53.32	54.00	-0.68	AVG
@	5180.000	97.03	7.81	104.84	-	-	AVG
#	10360.000	44.93	8.75	53.68	68.20	-14.52	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
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EUT Test Condition		Measurement Detail	
Channel	Channel 44	Frequency Range	1 GHz ~ 40 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	5141.120	47.94	7.83	55.77	74.00	-18.23	peak
@	5220.000	102.41	7.59	110.00	-	-	peak
-	5150.000	36.82	7.86	44.68	54.00	-9.32	AVG
@	5220.000	93.43	7.59	101.02	-	-	AVG
#	10440.000	48.55	9.03	57.58	68.20	-10.62	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	5135.890	58.20	7.82	66.02	74.00	-7.98	peak
@	5220.000	111.25	7.59	118.84	-	-	peak
-	5145.100	45.93	7.84	53.77	54.00	-0.23	AVG
@	5220.000	102.33	7.59	109.92	-	-	AVG
#	10440.000	51.40	9.03	60.43	68.20	-7.77	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
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EUT Test Condition		Measurement Detail	
Channel	Channel 48	Frequency Range	1 GHz ~ 40 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	5150.000	46.23	7.86	54.09	74.00	-19.91	peak
@	5240.000	104.49	7.40	111.89	-	-	peak
-	5150.000	36.66	7.86	44.52	54.00	-9.48	AVG
@	5240.000	96.38	7.40	103.78	-	-	AVG
#	10480.000	55.94	9.15	65.09	68.20	-3.11	peak
-	15720.000	48.13	12.52	60.65	74.00	-13.35	peak
-	15720.000	35.60	12.52	48.12	54.00	-5.88	AVG
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
-	5149.760	58.78	7.86	66.64	74.00	-7.36	peak
@	5240.000	111.59	7.40	118.99	-	-	peak
-	5150.000	42.72	7.86	50.58	54.00	-3.42	AVG
@	5240.000	103.59	7.40	110.99	-	-	AVG
#	10480.000	58.56	9.15	67.71	68.20	-0.49	peak
-	15720.000	44.22	12.52	56.74	74.00	-17.26	peak
-	15720.000	31.37	12.52	43.89	54.00	-10.11	AVG

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
4. "@": Fundamental Frequency.
5. "#": The radiated frequency is out of the restricted band.
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EUT Test Condition		Measurement Detail	
Channel	Channel 149	Frequency Range	1 GHz ~ 40 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
#	5646.467	49.92	8.03	57.95	68.20	-10.25	peak
-	5697.967	63.36	8.07	71.43	103.70	-32.27	peak
@	5745.000	103.45	8.38	111.83	-	-	peak
@	5745.000	93.41	8.38	101.79	-	-	AVG
-	11490.000	52.69	9.96	62.65	74.00	-11.35	peak
-	11490.000	40.31	9.96	50.27	54.00	-3.73	AVG
#	17235.000	40.19	16.28	56.47	68.20	-11.73	peak
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
#	5645.833	57.33	8.03	65.36	68.20	-2.84	peak
-	5697.967	77.25	8.07	85.32	103.70	-18.38	peak
@	5745.000	110.41	8.38	118.79	-	-	peak
@	5745.000	100.18	8.38	108.56	-	-	AVG
-	11490.000	54.35	9.96	64.31	74.00	-9.69	peak
-	11490.000	43.40	9.96	53.36	54.00	-0.64	AVG
#	17235.000	48.88	16.28	65.16	68.20	-3.04	peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
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EUT Test Condition		Measurement Detail	
Channel	Channel 157	Frequency Range	1 GHz ~ 40 GHz

Antenna Polarity & Test Distance: Horizontal at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
#	5631.583	46.67	8.02	54.69	68.20	-13.51	peak
-	5684.250	49.55	8.06	57.61	93.55	-35.94	peak
@	5785.000	101.54	8.43	109.97	-	-	peak
@	5785.000	91.40	8.43	99.83	-	-	AVG
-	5879.917	47.04	8.88	55.92	101.56	-45.64	peak
#	5943.783	45.67	9.04	54.71	68.20	-13.49	peak
-	11570.000	49.20	9.71	58.91	74.00	-15.09	peak
-	11570.000	41.03	9.71	50.74	54.00	-3.26	AVG
Antenna Polarity & Test Distance: Vertical at 3 m							
Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
#	5544.500	54.49	7.96	62.45	68.20	-5.75	peak
-	5690.883	57.09	8.07	65.16	98.45	-33.29	peak
@	5785.000	110.60	8.43	119.03	-	-	peak
@	5785.000	102.13	8.43	110.56	-	-	AVG
-	5878.800	54.35	8.87	63.22	102.39	-39.17	peak
#	5927.550	50.71	9.03	59.74	68.20	-8.46	peak
-	11570.000	51.76	9.71	61.47	74.00	-12.53	peak
-	11570.000	43.41	9.71	53.12	54.00	-0.88	AVG

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
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