

8.5 Frequency Stability

■ Test requirements

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

■ Test Procedure

The EUT was placed inside of an environmental chamber as the temperature in the chamber was varied between -20°C and +50°C. The temperature was incremented by 10°C intervals and the unit was allowed to stabilize at each measurement. And the edge point of EBW (26dB or 6dB bandwidth) was reported.

■ Test Results: **Comply**

U-NII 1 & U-NII 2A : (5150 MHz ~ 5350 MHz)

Supply Voltage (V DC)	TEMP (°C)	Operating Frequency	
		5180 MHz	5320 MHz
		26dBc low edge (Hz)	26dBc High edge(Hz)
3.85	+20(Ref)	5,169,191,250	5,330,356,250
	+50	5,168,915,000	5,330,210,750
	+40	5,168,936,250	5,329,768,000
	+30	5,168,932,500	5,329,784,250
	+20	5,169,191,250	5,330,356,250
	+10	5,168,952,500	5,329,915,250
	0	5,168,993,750	5,329,538,750
	-10	5,169,023,750	5,329,561,750
	-20	5,169,066,250	5,329,343,250
4.43	+20	5,168,942,500	5,329,815,000
3.20	+20	5,169,189,750	5,329,718,250

U-NII 2C : (5470 MHz ~ 5725 MHz)

Supply Voltage (V DC)	TEMP (°C)	Operating Frequency	
		5500 MHz	5720 MHz ^{Note1}
		26dBc low edge (Hz)	26dBc High edge(Hz)
3.85	+20(Ref)	5,489,918,750	-
	+50	5,489,916,250	-
	+40	5,489,894,500	-
	+30	5,489,886,250	-
	+20	5,489,918,750	-
	+10	5,489,936,750	-
	0	5,489,816,500	-
	-10	5,489,840,250	-
	-20	5,489,914,750	-
4.43	+20	5,489,927,750	-
3.20	+20	5,489,817,500	-

Note 1: This channel was not performed because operate in cross-band(U-NII 2C & 3).

U-NII 3 : (5725 MHz ~ 5850 MHz)

Supply Voltage (V DC)	TEMP (°C)	Operating Frequency	
		5745 MHz	5825 MHz
		6dBc low edge (Hz)	6dBc High edge(Hz)
3.85	+20(Ref)	5,737,472,000	5,832,542,000
	+50	5,737,432,500	5,832,497,000
	+40	5,737,488,750	5,832,505,000
	+30	5,737,431,250	5,832,503,750
	+20	5,737,472,000	5,832,542,000
	+10	5,737,438,750	5,832,522,500
	0	5,737,427,500	5,832,538,750
	-10	5,737,436,250	5,832,533,750
	-20	5,737,433,750	5,832,531,250
4.43	+20	5,737,420,000	5,832,535,000
3.20	+20	5,737,465,500	5,832,503,250

8.6 Radiated Spurious Emission Measurements

■ Test Procedure

• FCC Part 15.209(a) and (b)

Frequency (MHz)	Limit (uV/m)	Measurement Distance (meter)
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

** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

• FCC Part 15.205 (a): Only spurious emissions are permitted in any of the frequency bands listed below:

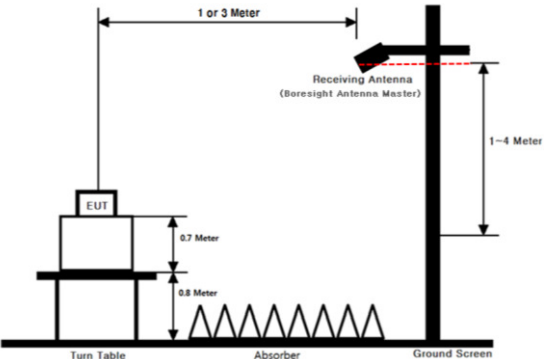
MHz	MHz	MHz	MHz	GHz	GHz
0.009 ~ 0.110	8.41425 ~ 8.41475	108 ~ 121.94	1300 ~ 1427	4.5 ~ 5.15	14.47 ~ 14.5
0.495 ~ 0.505	12.29 ~ 12.293	123 ~ 138	1435 ~ 1626.5	5.35 ~ 5.46	15.35 ~ 16.2
2.1735 ~ 2.1905	12.51975 ~	149.9 ~ 150.05	1645.5 ~ 1646.5	7.25 ~ 7.75	17.7 ~ 21.4
4.125 ~ 4.128	12.52025	160.52475 ~	1660 ~ 1710	8.025 ~ 8.5	22.01 ~ 23.12
4.17725 ~ 4.17775	12.57675 ~	160.52525	1718.8 ~ 1722.2	9.0 ~ 9.2	23.6 ~ 24.0
4.20725 ~ 4.20775	12.57725	160.7 ~ 160.9	2200 ~ 2300	9.3 ~ 9.5	31.2 ~ 31.8
6.215 ~ 6.218	13.36 ~ 13.41	162.0125 ~ 167.17	2310 ~ 2390	10.6 ~ 12.7	36.43 ~ 36.5
6.26775 ~ 6.26825	16.42 ~ 16.423	167.72 ~ 173.2	2483.5 ~ 2500	13.25 ~ 13.4	Above 38.6
6.31175 ~ 6.31225	16.69475 ~	240 ~ 285	2655 ~ 2900		
8.291 ~ 8.294	16.69525	322 ~ 335.4	3260 ~ 3267		
8.362 ~ 8.366	16.80425 ~	399.90 ~ 410	3332 ~ 3339		
8.37625 ~ 8.38675	16.80475	608 ~ 614	3345.8 ~ 3358		
	25.5 ~ 25.67	960 ~ 1240	3600 ~ 4000		
	37.5 ~ 38.25				
	73 ~ 74.6				
	74.8 ~ 75.2				

• **FCC Part 15.205(b):** The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

• **FCC Part 15.407 (b):** Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

- (1) For transmitters operating in the **5.15-5.25 GHz band**: all emissions outside of the **5.15-5.35 GHz band** shall not exceed an **EIRP of -27 dBm/MHz**.
- (2) For transmitters operating in the **5.25-5.35 GHz band**: all emissions outside of the **5.15-5.35 GHz band** shall not exceed an **EIRP of -27 dBm/MHz**.
- (3) For transmitters operating in the **5.47-5.725 GHz band**: all emissions outside of the **5.47-5.725 GHz band** shall not exceed an **EIRP of -27 dBm/MHz**.
- (4) For transmitters operating in the **5.725-5.85 GHz band**: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
- (5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.
- (6) Unwanted emissions **below 1 GHz** must comply with the general field strength limits set forth in **Section 15.209**. Further, any U-NII devices using an **AC power line** are required to comply also with the conducted limits set forth in **Section 15.207**.
- (7) The provisions of §15.205 apply to intentional radiators operating under this section
- (8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits.

■ Test Procedure

Below 1GHz	Above 1GHz
	

■ Test Procedure

1. The EUT is placed on a non-conductive table. For emission measurements at or below 1 GHz, the table height is 80 cm. For emission measurements above 1 GHz, the table height is 1.5 m.
2. The turn table shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 1m or 3 m away from the receiving antenna, which is varied from 1m to 4 m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.

Radiated spurious emission measured using following Measurement Procedure of **KDB789033 D02v01r04**

Measurement Data:

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : *MIMO(CDD) & 802.11a Normal*

Band	Tested Channel	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 1	36 (5180 MHz)	5149.19	H	Z	PK	44.45	6.61	N/A	N/A	51.06	74.00	22.94
		5149.52	H	Z	AV	35.31	6.61	0.22	N/A	42.14	54.00	11.86
		10359.28	V	Z	PK	44.69	10.66	N/A	N/A	55.35	68.20	12.85
		-	-	-	-	-	-	-	-	-	-	-
	40 (5200 MHz)	10402.91	V	Z	PK	43.85	10.76	N/A	N/A	54.61	68.20	13.59
		-	-	-	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-	-	-	-
	48 (5240 MHz)	10476.47	V	Z	PK	43.90	10.93	N/A	N/A	54.83	68.20	13.37
		-	-	-	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-	-	-	-
U-NII 2A	52 (5260 MHz)	10521.32	V	Z	PK	44.04	11.05	N/A	N/A	55.09	68.20	13.11
		-	-	-	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-	-	-	-
	60 (5300 MHz)	10600.34	V	Z	PK	43.82	11.30	N/A	N/A	55.12	74.00	18.88
		10600.10	V	Z	AV	34.18	11.30	0.22	N/A	45.70	54.00	8.30
		-	-	-	-	-	-	-	-	-	-	-
	64 (5320 MHz)	5350.37	H	Z	PK	44.59	6.64	N/A	N/A	51.23	74.00	22.77
		5350.30	H	Z	AV	35.12	6.64	0.22	N/A	41.98	54.00	12.02
		10639.29	V	X	PK	44.44	11.42	N/A	N/A	55.86	74.00	18.14
		10638.65	V	X	AV	34.16	11.42	0.22	N/A	45.80	54.00	8.20

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : *MIMO(CDD) & 802.11a & With Wireless charging pad*

Band	Tested Channel	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 1	36 (5180 MHz)	5149.93	H	X	PK	45.02	6.61	N/A	N/A	51.63	74.00	22.37
		5150.00	H	X	AV	35.29	6.61	0.22	N/A	42.12	54.00	11.88
		10361.50	V	X	PK	45.99	10.66	N/A	N/A	56.65	68.20	11.55
U-NII 2A	64 (5320 MHz)	5350.44	H	X	PK	44.80	6.64	N/A	N/A	51.44	74.00	22.56
		5350.39	H	X	AV	35.03	6.64	0.22	N/A	41.89	54.00	12.11
		10637.47	V	X	PK	44.77	11.42	N/A	N/A	56.19	74.00	17.81
		10638.67	V	X	AV	34.11	11.42	0.22	N/A	45.75	54.00	8.25

Note.

- No other spurious and harmonic emissions were found greater than listed emissions on above table.
- Sample Calculation.

$$\text{Margin} = \text{Limit} - \text{Result} \quad / \quad \text{Result} = \text{Reading} + \text{T.F} + \text{DCCF} + \text{DCF} \quad / \quad \text{T.F} = \text{AF} + \text{CL} - \text{AG}$$

Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,
DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor
- Measurement Distance = 3 m for below 18 GHz, Measurement Distance = 1 m for above 18 GHz.
Therefore Distance Correction Factor(DCF) : $-9.54 \text{ dB} = 20 \cdot \log(1\text{m}/3\text{m})$
- The limit is converted to field strength.

$$\text{E}[\text{dBuV/m}] = \text{EIRP}[\text{dBm}] + 95.2 \text{ dB} = -27 \text{ dBm} + 95.2 = 68.2 \text{ dBuV/m}$$

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : MIMO(CDD) & 802.11a

Band	Tested Channel	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 2C	100 (5500 MHz)	5459.63	V	X	PK	43.89	6.64	N/A	N/A	50.53	74.00	23.47
		5460.00	V	X	AV	34.73	6.64	0.22	N/A	41.59	54.00	12.41
		10996.34	V	Z	PK	43.83	12.53	N/A	N/A	56.36	74.00	17.64
		10999.60	V	Z	AV	33.65	12.53	0.22	N/A	46.40	54.00	7.60
	116 (5580 MHz)	11159.10	V	Z	PK	44.07	12.67	N/A	N/A	56.74	74.00	17.26
		11160.00	V	Z	AV	34.38	12.67	0.22	N/A	47.27	54.00	6.73
		-	-	-	-	-	-	-	-	-	-	-
	144 (5720 MHz)	11439.51	V	Z	PK	43.04	12.89	N/A	N/A	55.93	74.00	18.07
		11439.69	V	Z	AV	33.58	12.89	0.22	N/A	46.69	54.00	7.31
		-	-	-	-	-	-	-	-	-	-	-
U-NII 3	149 (5745 MHz)	5650.84	V	Y	PK	47.27	6.84	N/A	N/A	54.11	68.91	14.80
		5700.52	V	Y	PK	49.31	6.91	N/A	N/A	56.22	110.94	54.72
		5724.74	V	Y	PK	67.13	7.13	N/A	N/A	74.26	121.89	47.63
		11488.25	V	X	PK	43.71	12.93	N/A	N/A	56.64	74.00	17.36
		11486.82	V	X	AV	33.38	12.93	0.22	N/A	46.53	54.00	7.47
	157 (5785 MHz)	11570.53	V	Z	PK	44.71	12.99	N/A	N/A	57.70	74.00	16.30
		11570.53	V	Z	AV	33.74	12.99	0.22	N/A	46.95	54.00	7.05
		-	-	-	-	-	-	-	-	-	-	-
	165 (5825 MHz)	5850.14	V	Y	PK	63.47	7.46	N/A	N/A	70.93	122.04	51.11
		5874.85	V	Y	PK	49.66	7.56	N/A	N/A	57.22	110.84	53.62
		5924.34	V	Y	PK	47.20	7.68	N/A	N/A	54.88	68.77	13.89
		11653.71	V	Z	PK	43.83	13.05	N/A	N/A	56.88	74.00	17.12
		11653.90	V	Z	AV	33.79	13.05	0.22	N/A	47.06	54.00	6.94

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : MIMO(CDD) & 802.11a & With Wireless charging pad

Band	Tested Channel	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 2C	116 (5580 MHz)	11159.97	V	X	PK	44.58	12.67	N/A	N/A	57.25	74.00	16.75
		11159.47	V	X	AV	34.15	12.67	0.22	N/A	47.04	54.00	6.96
U-NII 3	165 (5825 MHz)	5854.37	H	X	PK	49.40	7.46	N/A	N/A	56.86	117.13	60.27
		5874.49	H	X	PK	47.96	7.56	N/A	N/A	55.52	110.94	55.42
		5924.75	H	X	PK	48.00	7.68	N/A	N/A	55.68	68.41	12.73
		11654.11	V	X	PK	43.73	13.05	N/A	N/A	56.78	74.00	17.22
		11654.42	V	X	AV	33.70	13.05	0.22	N/A	46.97	54.00	7.03

Note.

- No other spurious and harmonic emissions were found greater than listed emissions on above table.
- Sample Calculation.
 $\text{Margin} = \text{Limit} - \text{Result}$ / $\text{Result} = \text{Reading} + \text{T.F} + \text{DCCF} + \text{DCF}$ / $\text{T.F} = \text{AF} + \text{CL} - \text{AG}$
Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,
DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor
- Measurement Distance = 3 m for below 18 GHz, Measurement Distance = 1 m for above 18 GHz.
Therefore Distance Correction Factor(DCF) : $-9.54 \text{ dB} = 20 \cdot \log(1\text{m}/3\text{m})$
- The limit is converted to field strength.
 $E[\text{dBuV/m}] = \text{EIRP}[\text{dBm}] + 95.2 \text{ dB} = -27 \text{ dBm} + 95.2 = 68.2 \text{ dBuV/m}$

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : MIMO(CDD) & 802.11n(HT20)

Band	Tested Channel	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 1	36 (5180 MHz)	5149.95	H	Y	PK	45.11	6.61	N/A	N/A	51.72	74.00	22.28
		5149.95	H	Y	AV	35.62	6.61	0.23	N/A	42.46	54.00	11.54
		10353.62	V	Z	PK	44.23	10.65	N/A	N/A	54.88	68.20	13.32
		-	-	-	-	-	-	-	-	-	-	-
	40 (5200 MHz)	10402.38	V	Z	PK	44.49	10.76	N/A	N/A	55.25	68.20	12.95
		-	-	-	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-	-	-	-
	48 (5240 MHz)	10484.31	V	Z	PK	43.79	10.95	N/A	N/A	54.74	68.20	13.46
		-	-	-	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-	-	-	-
U-NII 2A	52 (5260 MHz)	10518.00	H	X	PK	44.67	11.08	N/A	N/A	55.75	68.20	12.45
		-	-	-	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-	-	-	-
	60 (5300 MHz)	10599.28	H	Y	PK	43.37	11.29	N/A	N/A	54.66	68.20	13.54
		10600.09	H	Y	AV	33.47	11.29	0.23	N/A	44.99	54.00	9.01
		-	-	-	-	-	-	-	-	-	-	-
	64 (5320 MHz)	5350.54	H	X	PK	46.42	6.64	N/A	N/A	53.06	74.00	20.94
		5350.32	H	X	AV	36.63	6.64	0.23	N/A	43.50	54.00	10.50
		10637.68	H	Y	PK	44.54	11.41	N/A	N/A	55.95	74.00	18.05
		10637.80	H	Y	AV	33.91	11.41	0.23	N/A	45.55	54.00	8.45

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : MIMO(CDD) & 802.11n(HT20)& With Wireless charging pad

Band	Tested Channel	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 1	36 (5180 MHz)	5149.65	H	X	PK	44.49	6.61	N/A	N/A	51.10	74.00	22.90
		5149.75	H	X	AV	35.51	6.61	0.23	N/A	42.35	54.00	11.65
		10356.57	V	X	PK	43.94	10.65	N/A	N/A	54.59	68.20	13.61
		-	-	-	-	-	-	-	-	-	-	-
U-NII 2A	64 (5320 MHz)	5350.63	H	X	PK	43.93	6.64	N/A	N/A	50.57	74.00	23.43
		5350.17	H	X	AV	34.65	6.64	0.23	N/A	41.52	54.00	12.48
		10639.38	H	X	PK	44.80	11.41	N/A	N/A	56.21	74.00	17.79
		10639.05	H	X	AV	33.73	11.41	0.23	N/A	45.37	54.00	8.63

Note.

- No other spurious and harmonic emissions were found greater than listed emissions on above table.
- Sample Calculation.
 $\text{Margin} = \text{Limit} - \text{Result}$ / $\text{Result} = \text{Reading} + \text{T.F} + \text{DCCF} + \text{DCF}$ / $\text{T.F} = \text{AF} + \text{CL} - \text{AG}$
Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,
DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor
- Measurement Distance = 3 m for below 18 GHz, Measurement Distance = 1 m for above 18 GHz.
Therefore Distance Correction Factor(DCF) : $-9.54 \text{ dB} = 20 \cdot \log(1\text{m}/3\text{m})$
- The limit is converted to field strength.
 $E[\text{dBuV/m}] = \text{EIRP}[\text{dBm}] + 95.2 \text{ dB} = -27 \text{ dBm} + 95.2 = 68.2 \text{ dBuV/m}$

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : MIMO(CDD) & 802.11n(HT20)

Band	Tested Channel	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 2C	100 (5500 MHz)	5459.58	H	Y	PK	49.10	6.64	N/A	N/A	55.74	74.00	18.26
		5459.81	H	Y	AV	39.28	6.64	0.23	N/A	46.15	54.00	7.85
		5468.90	H	Y	PK	49.44	6.66	N/A	N/A	56.10	68.20	12.10
		10997.59	H	Y	PK	43.31	12.53	N/A	N/A	55.84	74.00	18.16
		10996.43	H	Y	AV	33.56	12.53	0.23	N/A	46.32	54.00	7.68
	116 (5580 MHz)	11157.64	V	Z	PK	42.94	12.67	N/A	N/A	55.61	74.00	18.39
		11157.24	V	Z	AV	33.64	12.67	0.23	N/A	46.54	54.00	7.46
		-	-	-	-	-	-	-	-	-	-	-
	144 (5720 MHz)	11441.55	H	Y	PK	44.23	12.89	N/A	N/A	57.12	74.00	16.88
		11441.16	H	Y	AV	33.44	12.89	0.23	N/A	46.56	54.00	7.44
		-	-	-	-	-	-	-	-	-	-	-
U-NII 3	149 (5745 MHz)	5651.11	V	Y	PK	47.77	6.84	N/A	N/A	54.61	69.14	14.53
		5700.52	V	Y	PK	48.14	6.91	N/A	N/A	55.05	110.94	55.89
		5724.86	V	Y	PK	64.49	7.13	N/A	N/A	71.62	122.04	50.42
		11496.06	H	Y	PK	43.92	12.94	N/A	N/A	56.86	74.00	17.14
		11495.82	H	Y	AV	33.23	12.94	0.24	N/A	46.41	54.00	7.59
	157 (5785 MHz)	11568.15	H	Y	PK	44.22	12.99	N/A	N/A	57.21	74.00	16.79
		11568.12	H	Y	AV	33.61	12.99	0.24	N/A	46.84	54.00	7.16
		-	-	-	-	-	-	-	-	-	-	-
	165 (5825 MHz)	5850.07	V	Y	PK	58.94	7.46	N/A	N/A	66.40	122.12	55.72
		5874.49	V	Y	PK	49.10	7.56	N/A	N/A	56.66	110.94	54.28
		5924.16	V	Y	PK	47.61	7.68	N/A	N/A	55.29	68.92	13.63
		11646.84	H	Y	PK	44.16	13.05	N/A	N/A	57.21	74.00	16.79
		11648.13	H	Y	AV	33.63	13.05	0.24	N/A	46.92	54.00	7.08

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : MIMO(CDD) & 802.11n(HT20)& With Wireless charging pad

Band	Tested Channel	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 2C	144 (5720 MHz)	11442.33	H	X	PK	44.12	12.89	N/A	N/A	57.01	74.00	16.99
		11442.40	H	X	AV	33.18	12.89	0.23	N/A	46.30	54.00	7.70
		-	-	-	-	-	-	-	-	-	-	-
U-NII 3	165 (5825 MHz)	5853.21	H	X	PK	49.17	7.46	N/A	N/A	56.63	118.48	61.85
		5874.18	H	X	PK	49.36	7.56	N/A	N/A	56.92	111.03	54.11
		5924.69	H	X	PK	46.77	7.68	N/A	N/A	54.45	68.46	14.01
		11648.27	H	X	PK	44.61	13.05	N/A	N/A	57.66	74.00	16.34
		11648.14	H	X	AV	33.38	13.05	0.24	N/A	46.67	54.00	7.33

Note.

1. No other spurious and harmonic emissions were found greater than listed emissions on above table.

2. Sample Calculation.

$$\text{Margin} = \text{Limit} - \text{Result} \quad / \quad \text{Result} = \text{Reading} + \text{T.F} + \text{DCCF} + \text{DCF} \quad / \quad \text{T.F} = \text{AF} + \text{CL} - \text{AG}$$

Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor

3. Measurement Distance = 3 m for below 18 GHz, Measurement Distance = 1 m for above 18 GHz.

Therefore Distance Correction Factor(DCF) : - 9.54 dB = 20*log(1m/3m)

4. The limit is converted to field strength.

$$E[\text{dBuV/m}] = \text{EIRP}[\text{dBm}] + 95.2 \text{ dB} = -27 \text{ dBm} + 95.2 = 68.2 \text{ dBuV/m}$$

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : MIMO(SDM) & 802.11n(HT20)

Band	Tested Channel	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	
U-NII 1	36 (5180 MHz)	5149.90	H	X	PK	46.30	6.61	N/A	N/A	52.91	74.00	21.09	
		5149.90	H	X	AV	35.78	6.61	0.45	N/A	42.84	54.00	11.16	
		10359.50	H	Y	PK	43.66	10.66	N/A	N/A	54.32	68.20	13.88	
		-	-	-	-	-	-	-	-	-	-	-	
	40 (5200 MHz)	10400.83	V	Y	PK	43.55	10.76	N/A	N/A	54.31	68.20	13.89	
		-	-	-	-	-	-	-	-	-	-	-	
		-	-	-	-	-	-	-	-	-	-	-	
	48 (5240 MHz)	10481.50	H	Y	PK	44.05	10.94	N/A	N/A	54.99	68.20	13.21	
		-	-	-	-	-	-	-	-	-	-	-	
		-	-	-	-	-	-	-	-	-	-	-	
	U-NII 2A	52 (5260 MHz)	10518.50	H	Y	PK	44.70	11.04	N/A	N/A	55.74	68.20	12.46
			-	-	-	-	-	-	-	-	-	-	-
-			-	-	-	-	-	-	-	-	-	-	
60 (5300 MHz)		10600.03	H	Y	PK	43.98	11.30	N/A	N/A	55.28	74.00	18.72	
		10599.93	H	Y	AV	33.80	11.30	0.45	N/A	45.55	54.00	8.45	
		-	-	-	-	-	-	-	-	-	-	-	
64 (5320 MHz)		5350.28	V	X	PK	44.02	6.64	N/A	N/A	50.66	74.00	23.34	
		5350.28	V	X	AV	35.03	6.64	0.45	N/A	42.12	54.00	11.88	
		10639.20	V	Z	PK	43.93	11.42	N/A	N/A	55.35	74.00	18.65	
		10639.28	V	Z	AV	33.57	11.42	0.45	N/A	45.44	54.00	8.56	

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : MIMO(SDM) & 802.11n(HT20)& With Wireless charging pad

Band	Tested Channel	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 1	36 (5180 MHz)	5148.90	H	X	PK	45.30	6.61	N/A	N/A	51.91	74.00	22.09
		5149.04	H	X	AV	35.32	6.61	0.45	N/A	42.38	54.00	11.62
		10358.81	H	X	PK	43.86	10.66	N/A	N/A	54.52	68.20	13.68
		-	-	-	-	-	-	-	-	-	-	-
U-NII 2A	60 (5300 MHz)	10598.96	H	X	PK	44.33	11.30	N/A	N/A	55.63	74.00	18.37
		10599.33	H	X	AV	33.78	11.30	0.45	N/A	45.53	54.00	8.47
		-	-	-	-	-	-	-	-	-	-	-

Note.

- No other spurious and harmonic emissions were found greater than listed emissions on above table.
- Sample Calculation.
 $\text{Margin} = \text{Limit} - \text{Result}$ / $\text{Result} = \text{Reading} + \text{T.F} + \text{DCCF} + \text{DCF}$ / $\text{T.F} = \text{AF} + \text{CL} - \text{AG}$
Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,
DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor
- Measurement Distance = 3 m for below 18 GHz, Measurement Distance = 1 m for above 18 GHz.
Therefore Distance Correction Factor(DCF) : $-9.54 \text{ dB} = 20 \cdot \log(1\text{m}/3\text{m})$
- The limit is converted to field strength.
 $E[\text{dBuV/m}] = \text{EIRP}[\text{dBm}] + 95.2 \text{ dB} = -27 \text{ dBm} + 95.2 = 68.2 \text{ dBuV/m}$

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : MIMO(SDM) & 802.11n(HT20)

Band	Tested Channel	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 2C	100 (5500 MHz)	5458.72	H	Y	PK	50.64	6.64	N/A	N/A	57.28	74.00	16.72
		5458.69	H	Y	AV	39.73	6.64	0.45	N/A	46.82	54.00	7.18
		5469.25	H	Y	PK	48.78	6.66	N/A	N/A	55.44	68.20	12.76
		10998.90	V	Z	PK	43.65	12.54	N/A	N/A	56.19	74.00	17.81
		10998.44	V	Z	AV	33.37	12.54	0.45	N/A	46.36	54.00	7.64
	116 (5580 MHz)	11157.33	H	Y	PK	44.12	12.67	N/A	N/A	56.79	74.00	17.21
		11157.24	H	Y	AV	33.49	12.67	0.45	N/A	46.61	54.00	7.39
		-	-	-	-	-	-	-	-	-	-	-
	144 (5720 MHz)	11442.33	H	Y	PK	44.12	12.89	N/A	N/A	57.01	74.00	16.99
		11442.40	H	Y	AV	33.18	12.89	0.45	N/A	46.52	54.00	7.48
		-	-	-	-	-	-	-	-	-	-	-
U-NII 3	149 (5745 MHz)	5650.33	V	Y	PK	46.78	6.84	N/A	N/A	53.62	68.48	14.86
		5700.03	V	Y	PK	47.65	6.91	N/A	N/A	54.56	110.81	56.25
		5724.93	V	Y	PK	50.20	7.13	N/A	N/A	57.33	122.11	64.78
		11492.27	H	Y	PK	43.81	12.93	N/A	N/A	56.74	74.00	17.26
		11492.29	H	Y	AV	33.27	12.93	0.45	N/A	46.65	54.00	7.35
	157 (5785 MHz)	11574.90	V	Z	PK	44.10	12.99	N/A	N/A	57.09	74.00	16.91
		11574.86	V	Z	AV	33.52	12.99	0.45	N/A	46.96	54.00	7.04
	165 (5825 MHz)	5850.05	V	Y	PK	58.75	7.46	N/A	N/A	66.21	122.14	55.93
		5872.62	V	Y	PK	50.04	7.56	N/A	N/A	57.60	111.47	53.87
		5924.80	V	Y	PK	46.88	7.68	N/A	N/A	54.56	68.37	13.81
		11646.73	H	Y	PK	43.76	13.05	N/A	N/A	56.81	74.00	17.19
		11646.36	H	Y	AV	33.33	13.05	0.45	N/A	46.83	54.00	7.17

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : MIMO(SDM) & 802.11n(HT20)& With Wireless charging pad

Band	Tested Channel	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 2C	100 (5500 MHz)	5459.05	H	X	PK	49.26	6.64	N/A	N/A	55.90	74.00	18.10
		5459.12	H	X	AV	38.76	6.64	0.45	N/A	45.85	54.00	8.15
		11003.82	V	X	PK	43.49	12.54	N/A	N/A	56.03	74.00	17.97
		11004.03	V	X	AV	33.29	12.54	0.45	N/A	46.28	54.00	7.72
U-NII 3	165 (5825 MHz)	5854.12	H	X	PK	47.52	7.46	N/A	N/A	54.98	117.42	62.44
		5874.27	H	X	PK	48.82	7.56	N/A	N/A	56.38	111.00	54.62
		5924.82	H	X	PK	47.88	7.68	N/A	N/A	55.56	68.35	12.79
		11645.72	H	X	PK	44.21	13.05	N/A	N/A	57.26	74.00	16.74
		11646.35	H	X	AV	33.23	13.05	0.45	N/A	46.73	54.00	7.27

Note.

- No other spurious and harmonic emissions were found greater than listed emissions on above table.
- Sample Calculation.
 $\text{Margin} = \text{Limit} - \text{Result}$ / $\text{Result} = \text{Reading} + \text{T.F} + \text{DCCF} + \text{DCF}$ / $\text{T.F} = \text{AF} + \text{CL} - \text{AG}$
Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,
DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor
- Measurement Distance = 3 m for below 18 GHz, Measurement Distance = 1 m for above 18 GHz.
Therefore Distance Correction Factor(DCF) : - 9.54 dB = $20 \cdot \log(1\text{m}/3\text{m})$
- The limit is converted to field strength.
 $E[\text{dBuV/m}] = \text{EIRP}[\text{dBm}] + 95.2 \text{ dB} = -27 \text{ dBm} + 95.2 = 68.2 \text{ dBuV/m}$

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : MIMO(SDM) & 802.11n(HT40)

Band	Tested Channel	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 1	38 (5190 MHz)	5149.19	H	X	PK	52.94	6.49	N/A	N/A	59.43	74.00	14.57
		5149.80	H	X	AV	41.73	6.49	0.58	N/A	48.80	54.00	5.20
		10384.23	H	X	PK	43.98	10.72	N/A	N/A	54.70	68.20	13.50
		-	-	-	-	-	-	-	-	-	-	-
	46 (5230 MHz)	10460.61	H	X	PK	43.73	10.89	N/A	N/A	54.62	68.20	13.58
		-	-	-	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-	-	-	-
U-NII 2A	54 (5270 MHz)	10545.31	H	X	PK	45.42	11.13	N/A	N/A	56.55	68.20	11.65
		-	-	-	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-	-	-	-
	62 (5310 MHz)	5350.06	H	X	PK	55.01	6.61	N/A	N/A	61.62	74.00	12.38
		5350.02	H	X	AV	43.66	6.61	0.58	N/A	50.85	54.00	3.15
		10619.38	V	Z	PK	42.77	11.36	N/A	N/A	54.13	74.00	19.87
		10619.00	V	Z	AV	32.81	11.36	0.58	N/A	44.75	54.00	9.25
		-	-	-	-	-	-	-	-	-	-	-

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : MIMO(SDM) & 802.11n(HT40)& With Wireless charging pad

Band	Tested Channel	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 1	38 (5190 MHz)	5149.08	H	X	PK	53.24	6.49	N/A	N/A	59.73	74.00	14.27
		5149.78	H	X	AV	41.11	6.49	0.58	N/A	48.18	54.00	5.82
		10379.09	H	X	PK	44.01	10.72	N/A	N/A	54.73	68.20	13.47
		-	-	-	-	-	-	-	-	-	-	-
U-NII 2A	62 (5310 MHz)	5350.85	H	X	PK	54.72	6.61	N/A	N/A	61.33	74.00	12.67
		5350.00	H	X	AV	43.19	6.61	0.58	N/A	50.38	54.00	3.62
		10620.13	V	X	PK	43.16	11.36	N/A	N/A	54.52	74.00	19.48
		10619.44	V	X	AV	33.41	11.36	0.58	N/A	45.35	54.00	8.65

Note.

- No other spurious and harmonic emissions were found greater than listed emissions on above table.
- Sample Calculation.
 $\text{Margin} = \text{Limit} - \text{Result}$ / $\text{Result} = \text{Reading} + \text{T.F} + \text{DCCF} + \text{DCF}$ / $\text{T.F} = \text{AF} + \text{CL} - \text{AG}$
Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,
DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor
- Measurement Distance = 3 m for below 18 GHz, Measurement Distance = 1 m for above 18 GHz.
Therefore Distance Correction Factor(DCF) : $-9.54 \text{ dB} = 20 \cdot \log(1\text{m}/3\text{m})$
- The limit is converted to field strength.
 $\text{E}[\text{dBuV/m}] = \text{EIRP}[\text{dBm}] + 95.2 \text{ dB} = -27 \text{ dBm} + 95.2 = 68.2 \text{ dBuV/m}$

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : MIMO(SDM) & 802.11n(HT40)

Band	Tested Channel	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 2C	102 (5510 MHz)	5459.31	H	X	PK	48.36	6.64	N/A	N/A	55.00	74.00	19.00
		5459.84	H	X	AV	36.84	6.64	0.58	N/A	44.06	54.00	9.94
		5468.88	H	X	PK	52.97	6.66	N/A	N/A	59.63	68.20	8.57
		11023.09	V	Z	PK	43.70	12.70	N/A	N/A	56.40	74.00	17.60
		11023.50	V	Z	AV	33.28	12.70	0.58	N/A	46.56	54.00	7.44
		-	-	-	-	-	-	-	-	-	-	-
	118 (5590 MHz)	11096.10	V	Z	PK	43.97	12.62	N/A	N/A	56.59	74.00	17.41
		11097.08	V	Z	AV	33.58	12.62	0.58	N/A	46.78	54.00	7.22
		-	-	-	-	-	-	-	-	-	-	-
	142 (5710 MHz)	11420.04	V	Z	PK	43.64	12.88	N/A	N/A	56.52	74.00	17.48
		11417.85	V	Z	AV	33.43	12.88	0.58	N/A	46.89	54.00	7.11
		-	-	-	-	-	-	-	-	-	-	-
U-NII 3	151 (5755 MHz)	5650.77	V	Y	PK	47.33	6.84	N/A	N/A	54.17	68.86	14.69
		5718.26	V	Y	PK	66.70	6.99	N/A	N/A	73.69	115.91	42.22
		5721.84	V	Y	PK	68.89	7.03	N/A	N/A	75.92	118.54	42.62
		11513.53	V	Z	PK	43.83	12.95	N/A	N/A	56.78	74.00	17.22
		11513.25	V	Z	AV	33.24	12.95	0.58	N/A	46.77	54.00	7.23
	159 (5795 MHz)	5852.63	V	Y	PK	54.98	7.36	N/A	N/A	62.34	119.15	56.81
		5874.20	V	Y	PK	48.36	7.56	N/A	N/A	55.92	111.03	55.11
		5924.41	V	Y	PK	46.29	7.68	N/A	N/A	53.97	68.70	14.73
		11586.35	V	Z	PK	44.37	13.00	N/A	N/A	57.37	74.00	16.63
		11585.91	V	Z	AV	33.78	13.00	0.58	N/A	47.36	54.00	6.64

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : MIMO(SDM) & 802.11n(HT40)& With Wireless charging pad

Band	Tested Channel	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 2C	142 (5710 MHz)	11423.65	V	X	PK	44.14	12.88	N/A	N/A	57.02	74.00	16.98
		11423.10	V	X	AV	33.63	12.88	0.58	N/A	47.09	54.00	6.91
		-	-	-	-	-	-	-	-	-	-	-
U-NII 3	159 (5795 MHz)	5854.67	H	X	PK	49.95	7.36	N/A	N/A	57.31	116.78	59.47
		5874.07	H	X	PK	48.68	7.56	N/A	N/A	56.24	111.06	54.82
		5923.90	H	X	PK	48.41	7.68	N/A	N/A	56.09	69.14	13.05
		11587.15	V	X	PK	44.60	13.00	N/A	N/A	57.60	74.00	16.40
		11586.63	V	X	AV	33.62	13.00	0.58	N/A	47.20	54.00	6.80

Note.

- No other spurious and harmonic emissions were found greater than listed emissions on above table.
- Sample Calculation.
 $\text{Margin} = \text{Limit} - \text{Result}$ / $\text{Result} = \text{Reading} + \text{T.F} + \text{DCCF} + \text{DCF}$ / $\text{T.F} = \text{AF} + \text{CL} - \text{AG}$
Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,
DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor
- Measurement Distance = 3 m for below 18 GHz, Measurement Distance = 1 m for above 18 GHz.
Therefore Distance Correction Factor(DCF) : $-9.54 \text{ dB} = 20 \cdot \log(1\text{m}/3\text{m})$
- The limit is converted to field strength.
 $E[\text{dBuV/m}] = \text{EIRP}[\text{dBm}] + 95.2 \text{ dB} = -27 \text{ dBm} + 95.2 = 68.2 \text{ dBuV/m}$

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : MIMO(SDM) & 802.11ac(VHT80)

Band	Tested Channel	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 1	42 (5210 MHz)	5149.90	H	Y	PK	55.31	6.49	N/A	N/A	61.80	74.00	12.20
		5149.91	H	Y	AV	43.82	6.49	0.63	N/A	50.94	54.00	3.06
		10421.06	H	X	PK	44.06	10.80	N/A	N/A	54.86	68.20	13.34
		-	-	-	-	-	-	-	-	-	-	-
U-NII 2A	58 (5290 MHz)	5351.52	H	X	PK	55.52	6.61	N/A	N/A	62.13	74.00	11.87
		5350.81	H	X	AV	43.61	6.61	0.63	N/A	50.85	54.00	3.15
		10577.22	H	X	PK	43.96	11.23	N/A	N/A	55.19	68.20	13.01
		-	-	-	-	-	-	-	-	-	-	-

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : MIMO(SDM) & 802.11ac(VHT80)& With Wireless charging pad

Band	Tested Channel	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 1	42 (5210 MHz)	5149.57	H	X	PK	52.93	6.49	N/A	N/A	59.42	74.00	14.58
		5149.57	H	X	AV	42.65	6.49	0.63	N/A	49.77	54.00	4.23
		10417.94	H	X	PK	43.96	10.80	N/A	N/A	54.76	68.20	13.44
		-	-	-	-	-	-	-	-	-	-	-
U-NII 2A	58 (5290 MHz)	5356.02	H	X	PK	56.01	6.61	N/A	N/A	62.62	74.00	11.38
		5353.79	H	X	AV	43.58	6.61	0.63	N/A	50.82	54.00	3.18
		10580.08	H	X	PK	44.05	11.23	N/A	N/A	55.28	68.20	12.92
		-	-	-	-	-	-	-	-	-	-	-

Note.

1. No other spurious and harmonic emissions were found greater than listed emissions on above table.
2. Sample Calculation.
 $\text{Margin} = \text{Limit} - \text{Result}$ / $\text{Result} = \text{Reading} + \text{T.F} + \text{DCCF} + \text{DCF}$ / $\text{T.F} = \text{AF} + \text{CL} - \text{AG}$
Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,
DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor
3. Measurement Distance = 3 m for below 18 GHz, Measurement Distance = 1 m for above 18 GHz.
Therefore Distance Correction Factor(DCF) : $-9.54 \text{ dB} = 20 \cdot \log(1\text{m}/3\text{m})$
4. The limit is converted to field strength.
 $\text{E}[\text{dBuV/m}] = \text{EIRP}[\text{dBm}] + 95.2 \text{ dB} = -27 \text{ dBm} + 95.2 = 68.2 \text{ dBuV/m}$

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : MIMO(SDM) & 802.11ac(VHT80)

Band	Tested Channel	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 2C	106 (5530 MHz)	5459.57	V	Y	PK	54.17	6.64	N/A	N/A	60.81	74.00	13.19
		5459.83	V	Y	AV	43.70	6.64	0.63	N/A	50.97	54.00	3.03
		5468.91	V	Y	PK	56.15	6.66	N/A	N/A	62.81	74.00	11.19
		11061.80	V	Z	PK	44.74	12.59	N/A	N/A	57.33	74.00	16.67
		11062.14	V	Z	AV	33.68	12.59	0.63	N/A	46.90	54.00	7.10
	138 (5690 MHz)	11381.43	V	Z	PK	44.04	12.84	N/A	N/A	56.88	74.00	17.12
		11381.66	V	Z	AV	33.07	12.84	0.63	N/A	46.54	54.00	7.46
		-	-	-	-	-	-	-	-	-	-	-
U-NII 3	155 (5775 MHz)	5852.77	V	Y	PK	67.97	7.47	N/A	N/A	75.44	118.99	43.55
		5855.23	V	Y	PK	65.99	7.48	N/A	N/A	73.47	116.34	42.87
		5924.08	V	Y	PK	48.35	7.68	N/A	N/A	56.03	68.98	12.95
		11550.45	H	Y	PK	43.40	12.98	N/A	N/A	56.38	74.00	17.62
		11550.75	H	Y	AV	33.66	12.98	0.71	N/A	47.35	54.00	6.65

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : MIMO(SDM) & 802.11ac(VHT80)& With Wireless charging pad

Band	Tested Channel	Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
U-NII 2C	106 (5530 MHz)	5456.15	H	X	PK	51.81	6.64	N/A	N/A	58.45	74.00	15.55
		5460.75	H	X	AV	41.08	6.64	0.63	N/A	48.35	54.00	5.65
		11060.83	V	X	PK	43.80	12.59	N/A	N/A	56.39	74.00	17.61
		11061.31	V	X	AV	33.53	12.59	0.63	N/A	46.75	54.00	7.25
U-NII 3	155 (5775 MHz)	5851.99	H	X	PK	59.49	7.47	N/A	N/A	66.96	119.89	52.93
		5867.91	H	X	PK	56.46	7.48	N/A	N/A	63.94	112.79	48.85
		5920.75	H	X	PK	48.21	7.68	N/A	N/A	55.89	71.82	15.93
		11549.87	H	X	PK	44.07	12.98	N/A	N/A	57.05	74.00	16.95
		11551.13	H	X	AV	33.35	12.98	0.71	N/A	47.04	54.00	6.96

Note.

- No other spurious and harmonic emissions were found greater than listed emissions on above table.
- Sample Calculation.
 $\text{Margin} = \text{Limit} - \text{Result}$ / $\text{Result} = \text{Reading} + \text{T.F} + \text{DCCF} + \text{DCF}$ / $\text{T.F} = \text{AF} + \text{CL} - \text{AG}$
Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,
DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor
- Measurement Distance = 3 m for below 18 GHz, Measurement Distance = 1 m for above 18 GHz.
Therefore Distance Correction Factor(DCF) : $-9.54 \text{ dB} = 20 \cdot \log(1\text{m}/3\text{m})$
- The limit is converted to field strength.
 $\text{E}[\text{dBuV/m}] = \text{EIRP}[\text{dBm}] + 95.2 \text{ dB} = -27 \text{ dBm} + 95.2 = 68.2 \text{ dBuV/m}$

- WiFi DBS(Dual-Band Simultaneous) Test Results

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : Simultaneously transmission

	Antenna	Band	Mode	TX Frequency(MHz)
Transmitting Configuration	1	2.4GHz	802.11 g	2462 MHz
	2	U-NII 1	802.11ac(VHT80)	5210 MHz

Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2483.68	H	Y	PK	52.84	2.44	N/A	N/A	55.28	74.00	18.72
2483.74	H	Y	AV	41.21	2.44	0.24	N/A	43.89	54.00	10.11
4924.65	H	Z	PK	44.63	6.73	N/A	N/A	51.36	74.00	22.64
4924.48	H	Z	AV	33.42	6.73	0.24	N/A	40.39	54.00	13.61
5149.01	H	Y	PK	53.81	6.49	N/A	N/A	60.30	74.00	13.70
5149.71	H	Y	AV	43.38	6.49	0.38	N/A	50.25	54.00	3.75
10419.64	H	X	PK	43.78	10.80	N/A	N/A	54.58	68.20	13.62
-	-	-	-	-	-	-	-	-	-	-

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : Simultaneously transmission

	Antenna	Band	Mode	TX Frequency(MHz)
Transmitting Configuration	1	2.4GHz	802.11 g	2462 MHz
	2	U-NII 2A	802.11ac(VHT80)	5290 MHz

Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2484.06	H	Y	PK	52.81	2.44	N/A	N/A	55.25	74.00	18.75
2483.61	H	Y	AV	41.50	2.44	0.24	N/A	44.18	54.00	9.82
4924.34	H	Z	PK	44.70	6.73	N/A	N/A	51.43	74.00	22.57
4924.29	H	Z	AV	33.53	6.73	0.24	N/A	40.50	54.00	13.50
5352.72	H	X	PK	54.76	6.61	N/A	N/A	61.37	74.00	12.63
5351.59	H	X	AV	41.57	6.61	0.38	N/A	48.56	54.00	5.44
10580.06	H	X	PK	43.96	11.23	N/A	N/A	55.19	68.20	13.01
-	-	-	-	-	-	-	-	-	-	-

1. No other spurious and harmonic emissions were found greater than listed emissions on above table.

2. Sample Calculation.

$$\text{Margin} = \text{Limit} - \text{Result} \quad / \quad \text{Result} = \text{Reading} + \text{T.F} + \text{DCCF} + \text{DCF} \quad / \quad \text{T.F} = \text{AF} + \text{CL} - \text{AG}$$

Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor

3. Measurement Distance = 3 m for below 18 GHz, Measurement Distance = 1 m for above 18 GHz.

Therefore Distance Correction Factor(DCF) : - 9.54 dB = 20*log(1m/3m)

4. The limit is converted to field strength.

$$E[\text{dBuV/m}] = \text{EIRP}[\text{dBm}] + 95.2 \text{ dB} = -27 \text{ dBm} + 95.2 = 68.2 \text{ dBuV/m}$$

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : Simultaneously transmission

	Antenna	Band	Mode	TX Frequency(MHz)
Transmitting Configuration	1	2.4GHz	802.11 g	2462 MHz
	2	U-NII 2C	802.11ac(VHT80)	5530 MHz

Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2483.53	H	Y	PK	52.63	2.44	N/A	N/A	55.07	74.00	18.93
2483.52	H	Y	AV	41.16	2.44	0.24	N/A	43.84	54.00	10.16
4923.80	H	Z	PK	44.28	6.73	N/A	N/A	51.01	74.00	22.99
4923.64	H	Z	AV	33.27	6.73	0.24	N/A	40.24	54.00	13.76
5459.88	H	Y	PK	52.18	6.64	N/A	N/A	58.82	74.00	15.18
5459.49	H	Y	AV	41.19	6.64	0.38	N/A	48.21	54.00	5.79
11061.37	V	X	PK	43.83	12.59	N/A	N/A	56.42	74.00	17.58
11061.72	V	X	AV	33.75	12.59	0.38	N/A	46.72	54.00	7.28

Radiated Spurious Emissions data(9 kHz ~ 40 GHz) : Simultaneously transmission

	Antenna	Band	Mode	TX Frequency(MHz)
Transmitting Configuration	1	2.4GHz	802.11 g	2462 MHz
	2	U-NII 3	802.11ac(VHT80)	5775 MHz

Freq. (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2483.91	H	Y	PK	52.81	2.44	N/A	N/A	55.25	74.00	18.75
2483.54	H	Y	AV	41.39	2.44	0.24	N/A	44.07	54.00	9.93
4923.86	H	Z	PK	44.43	6.73	N/A	N/A	51.16	74.00	22.84
4923.74	H	Z	AV	33.39	6.73	0.24	N/A	40.36	54.00	13.64
5850.45	V	Y	PK	62.69	7.47	N/A	N/A	70.16	121.68	51.52
5859.40	V	Y	PK	62.01	7.48	N/A	N/A	69.49	115.17	45.68
5920.65	V	Y	PK	56.50	7.68	N/A	N/A	64.18	71.91	7.73
11552.63	H	Y	PK	44.13	12.98	N/A	N/A	57.11	74.00	16.89
11552.40	H	Y	AV	33.18	12.98	0.35	N/A	46.51	54.00	7.49

1. No other spurious and harmonic emissions were found greater than listed emissions on above table.

2. Sample Calculation.

Margin = Limit – Result / Result = Reading + T.F+ DCCF + DCF / T.F = AF + CL – AG
Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,
DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor

3. Measurement Distance = 3 m for below 18 GHz, Measurement Distance = 1 m for above 18 GHz.

Therefore Distance Correction Factor(DCF) : - 9.54 dB = 20*log(1m/3m)

4. The limit is converted to field strength.

E[dBuV/m] = EIRP[dBm] + 95.2 dB = -27 dBm + 95.2 = 68.2 dBuV/m

8.7 AC Conducted Emissions

■ Test Requirements and limit, §15.207

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 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN).

Frequency Range (MHz)	Conducted Limit (dBuV)	
	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

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

■ Test Configuration

See test photographs for the actual connections between EUT and support equipment.

■ Test Procedure

Conducted emissions from the EUT were measured according to the 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.

■ Measurement Data: **Comply**

Note 1: See next pages for actual measured spectrum plots and data for worst case result.

AC Line Conducted Emissions (Graph)

Test Mode: U-NII 1 & 802.11a & MIMO(CDD) & 5180 MHz

Results of Conducted Emission

DT&C

Date 2017-07-22

Model LG-H930
Function 5G WLAN
Mode
Test condition

Temp/Humi.
Power Supply
Operator

23 'C 46 %
AC 120 V 60 Hz
S.G Lee

Memo 5180MHz

LIMIT : FCC P15.207 QP
FCC P15.207 AV

