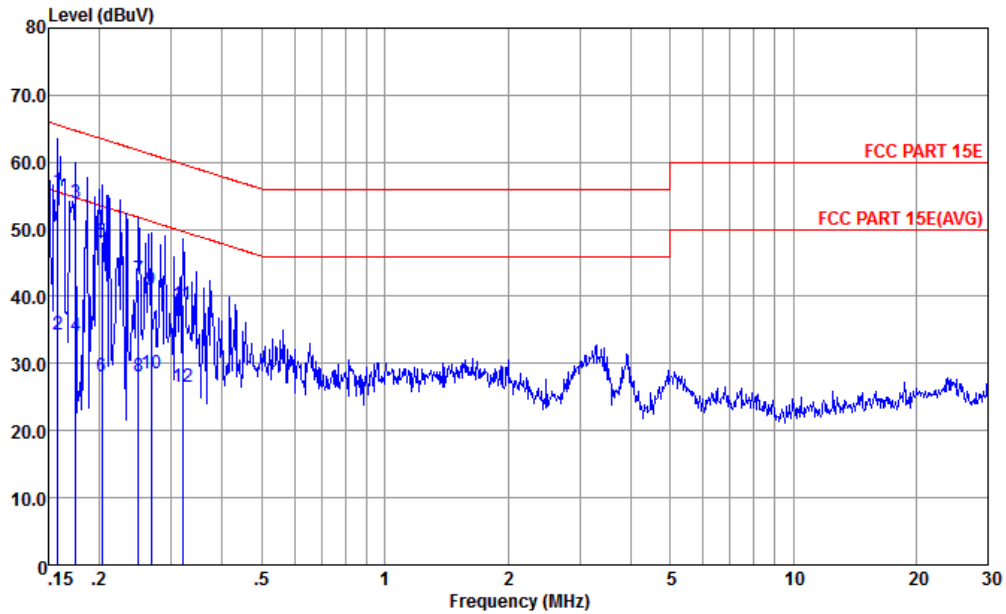




Appendix B. AC Conducted Emission Test Results

Test Engineer :	Amos Zhang	Temperature :	25.3~26.2°C
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

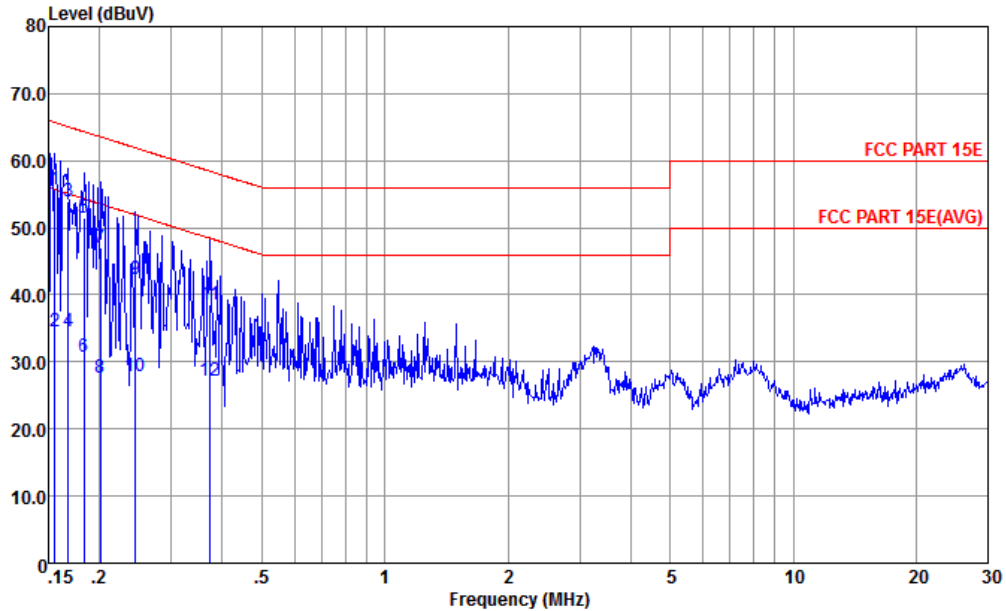


Site : CO01-KS
Condition : FCC PART 15E TWO-LISN-CN02-L LINE

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1 *	0.158	55.70	-9.86	65.56	35.60	9.64	10.46	QP
2	0.158	34.30	-21.26	55.56	14.20	9.64	10.46	Average
3	0.175	53.86	-10.86	64.72	33.80	9.64	10.42	QP
4	0.175	34.16	-20.56	54.72	14.10	9.64	10.42	Average
5	0.203	48.21	-15.28	63.49	28.21	9.64	10.36	QP
6	0.203	28.11	-25.38	53.49	8.11	9.64	10.36	Average
7	0.249	42.47	-19.31	61.78	22.50	9.64	10.33	QP
8	0.249	28.07	-23.71	51.78	8.10	9.64	10.33	Average
9	0.267	41.06	-20.14	61.20	21.10	9.64	10.32	QP
10	0.267	28.56	-22.64	51.20	8.60	9.64	10.32	Average
11	0.320	38.74	-20.97	59.71	18.80	9.64	10.30	QP
12	0.320	26.54	-23.17	49.71	6.60	9.64	10.30	Average



Test Engineer :	Amos Zhang	Temperature :	25.3~26.2°C
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : CO01-KS
 Condition : FCC PART 15E TWO-LISN-CN02-N NEUTRAL

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1 *	0.156	55.77	-9.92	65.69	35.49	9.81	10.47	QP
2	0.156	34.47	-21.22	55.69	14.19	9.81	10.47	Average
3	0.168	53.87	-11.21	65.08	33.60	9.84	10.43	QP
4	0.168	34.57	-20.51	55.08	14.30	9.84	10.43	Average
5	0.183	51.46	-12.87	64.33	31.19	9.87	10.40	QP
6	0.183	30.86	-23.47	54.33	10.59	9.87	10.40	Average
7	0.201	47.05	-16.53	63.58	26.80	9.89	10.36	QP
8	0.201	27.55	-26.03	53.58	7.30	9.89	10.36	Average
9	0.246	42.37	-19.54	61.91	22.19	9.84	10.34	QP
10	0.246	27.77	-24.14	51.91	7.59	9.84	10.34	Average
11	0.373	38.54	-19.89	58.43	18.50	9.76	10.28	QP
12	0.373	27.24	-21.19	48.43	7.20	9.76	10.28	Average

Note:

- Level(dBμV) = Read Level(dBμV) + LISN Factor(dB) + Cable Loss(dB)
- Over Limit(dB) = Level(dBμV) – Limit Line(dBμV)



Appendix C. Radiated Spurious Emission

Band 4 - 5725~5850MHz WIFI 802.11a (Band Edge @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 149 5745MHz		5628.8	57.33	-10.97	68.3	42.07	35.48	12.06	32.28	297	144	P	H
		5678.8	57.12	-32.53	89.65	41.72	35.56	12.1	32.26	297	144	P	H
		5716.4	57.64	-52.25	109.89	42.15	35.62	12.13	32.26	297	144	P	H
		5723.2	63.03	-55.17	118.2	47.49	35.65	12.15	32.26	297	144	P	H
		5746	106.89	-	-	91.3	35.68	12.16	32.25	297	144	P	H
		5746	101.03	-	-	85.44	35.68	12.16	32.25	297	144	A	H
		5602	57.96	-10.34	68.3	42.72	35.47	12.05	32.28	106	177	P	V
		5661.6	61.19	-15.72	76.91	45.83	35.53	12.09	32.26	106	177	P	V
		5720	75.79	-35.11	110.9	60.25	35.65	12.15	32.26	106	177	P	V
		5724.8	80.82	-41.02	121.84	65.28	35.65	12.15	32.26	106	177	P	V
		5746	119.19	-	-	103.6	35.68	12.16	32.25	106	177	P	V
		5746	112.63	-	-	97.04	35.68	12.16	32.25	106	177	A	V
802.11a CH 165 5825MHz		5850.8	69.45	-51.03	120.48	53.56	35.87	12.25	32.23	273	140	P	H
		5859.2	62.81	-46.91	109.72	46.88	35.9	12.26	32.23	273	140	P	H
		5904.8	57.66	-25.55	83.21	41.69	35.88	12.31	32.22	273	140	P	H
		5934	57.61	-10.69	68.3	41.64	35.87	12.32	32.22	273	140	P	H
		5824	110.76	-	-	94.92	35.84	12.24	32.24	273	140	P	H
		5824	103.93	-	-	88.09	35.84	12.24	32.24	273	140	A	H
		5854.4	75.31	-36.96	112.27	59.38	35.9	12.26	32.23	123	180	P	V
		5855.2	74.1	-36.74	110.84	58.17	35.9	12.26	32.23	123	180	P	V
		5882.4	61.62	-38.18	99.8	45.67	35.89	12.28	32.22	123	180	P	V
		5981.6	58.93	-9.37	68.3	42.93	35.84	12.37	32.21	123	180	P	V
		5830	119.56	-	-	103.72	35.84	12.24	32.24	123	180	P	V
		5830	112	-	-	96.16	35.84	12.24	32.24	123	180	A	V
Remark	<ol style="list-style-type: none"> No other spurious found. All results are PASS against Peak and Average limit line. 												



Band 4 5725~5850MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 149 5745MHz		11489.48	43.98	-30.02	74	48.1	38.69	17.62	60.43	100	360	P	H
		11489.48	45.12	-28.88	74	49.24	38.69	17.62	60.43	100	360	P	V
802.11a CH 157 5785MHz		11569.56	45.2	-28.8	74	49.16	38.74	17.68	60.38	100	360	P	H
		11569.56	44.71	-29.29	74	48.67	38.74	17.68	60.38	100	360	P	V
802.11a CH 165 5825MHz		11649.64	46	-28	74	49.83	38.78	17.72	60.33	300	0	P	H
		11649.64	45.67	-28.33	74	49.5	38.78	17.72	60.33	300	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

WIFI 802.11ac VHT20 (Band Edge @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT20 CH 149 5745MHz		5637.6	57.57	-10.73	68.3	42.26	35.5	12.08	32.27	299	159	P	H
		5656.4	57.25	-15.8	73.05	41.9	35.53	12.09	32.27	299	159	P	H
		5719.6	64.44	-46.35	110.79	48.9	35.65	12.15	32.26	299	159	P	H
		5724.4	69	-51.93	120.93	53.46	35.65	12.15	32.26	299	159	P	H
		5746	107.27	-	-	91.68	35.68	12.16	32.25	299	159	P	H
		5746	100.63	-	-	85.04	35.68	12.16	32.25	299	159	A	H
		5643.2	59.03	-9.27	68.3	43.72	35.5	12.08	32.27	100	179	P	V
		5697.6	62.32	-41.21	103.53	46.87	35.59	12.12	32.26	100	179	P	V
		5720	69.69	-41.21	110.9	54.15	35.65	12.15	32.26	100	179	P	V
		5724.4	76.37	-44.56	120.93	60.83	35.65	12.15	32.26	100	179	P	V
		5752	115.43	-	-	99.78	35.72	12.18	32.25	100	179	P	V
	5752	108.43	-	-	92.78	35.72	12.18	32.25	100	179	A	V	
802.11ac VHT20 CH 165 5825MHz		5851.2	64.61	-54.95	119.56	48.72	35.87	12.25	32.23	295	139	P	H
		5855.6	60.87	-49.86	110.73	44.94	35.9	12.26	32.23	295	139	P	H
		5878.8	57.68	-44.8	102.48	41.73	35.89	12.28	32.22	295	139	P	H
		5939.6	57.73	-10.57	68.3	41.75	35.86	12.34	32.22	295	139	P	H
		5830	108.61	-	-	92.77	35.84	12.24	32.24	295	139	P	H
		5830	100.69	-	-	84.85	35.84	12.24	32.24	295	139	A	H
		5850.4	75.22	-46.17	121.39	59.33	35.87	12.25	32.23	100	215	P	V
		5855.2	72.37	-38.47	110.84	56.44	35.9	12.26	32.23	100	215	P	V
		5875.2	61.66	-43.49	105.15	45.71	35.89	12.28	32.22	100	215	P	V
		5954.4	58.4	-9.9	68.3	42.41	35.86	12.34	32.21	100	215	P	V
		5830	117.21	-	-	101.37	35.84	12.24	32.24	100	215	P	V
	5830	109.72	-	-	93.88	35.84	12.24	32.24	100	215	A	V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

WIFI 802.11ac VHT20 (Harmonic @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT20		11489.48	45.45	-28.55	74	49.57	38.69	17.62	60.43	300	0	P	H
CH 149		11489.48	44.81	-29.19	74	48.93	38.69	17.62	60.43	300	0	P	V
5745MHz													
802.11ac VHT20		11569.56	45.32	-28.68	74	49.28	38.74	17.68	60.38	300	0	P	H
CH 157		11569.56	44.95	-29.05	74	48.91	38.74	17.68	60.38	300	0	P	V
5785MHz													
802.11ac VHT20		11649.64	45.2	-28.8	74	49.03	38.78	17.72	60.33	300	0	P	H
CH 165		11649.64	46.4	-27.6	74	50.23	38.78	17.72	60.33	300	0	P	V
5825MHz													
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz
WIFI 802.11ac VHT40 (Band Edge @ 3m)

Table with 14 columns: WIFI Ant. 1+2, Note, Frequency (MHz), Level (dBµV/m), Over Limit (dB), Limit Line (dBµV/m), Read Level (dBµV), Antenna Factor (dB/m), Path Loss (dB), Preamp Factor (dB), Ant Pos (cm), Table Pos (deg), Peak Avg. (P/A), Pol. (H/V). Rows include frequencies from 5640 to 5954.8 MHz and 5752 MHz for VHT40 and CH 151.



WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT40 CH 159 5795MHz		5636	56.65	-11.65	68.3	41.34	35.5	12.08	32.27	278	140	P	H
		5687.6	57.37	-38.78	96.15	41.92	35.59	12.12	32.26	278	140	P	H
		5715.2	58.85	-50.71	109.56	43.36	35.62	12.13	32.26	278	140	P	H
		5720.8	57.63	-55.09	112.72	42.09	35.65	12.15	32.26	278	140	P	H
		5850.8	62.08	-58.4	120.48	46.19	35.87	12.25	32.23	278	140	P	H
		5856.8	60.99	-49.41	110.4	45.06	35.9	12.26	32.23	278	140	P	H
		5875.6	57.42	-47.43	104.85	41.47	35.89	12.28	32.22	278	140	P	H
		5995.6	57.31	-10.99	68.3	41.31	35.83	12.38	32.21	278	140	P	H
		5794	107.45	-	-	91.7	35.78	12.21	32.24	278	140	P	H
		5794	98.12	-	-	82.37	35.78	12.21	32.24	278	140	A	H
		5642.4	58.43	-9.87	68.3	43.12	35.5	12.08	32.27	100	176	P	V
		5696.8	59.44	-43.5	102.94	43.99	35.59	12.12	32.26	100	176	P	V
		5716.8	63.18	-46.83	110.01	47.69	35.62	12.13	32.26	100	176	P	V
		5724	66.05	-53.97	120.02	50.51	35.65	12.15	32.26	100	176	P	V
		5852	68.4	-49.34	117.74	52.51	35.87	12.25	32.23	100	176	P	V
		5856.4	67.96	-42.55	110.51	52.03	35.9	12.26	32.23	100	176	P	V
		5876.8	62.63	-41.33	103.96	46.68	35.89	12.28	32.22	100	176	P	V
		5968	58.03	-10.27	68.3	42.04	35.85	12.35	32.21	100	176	P	V
		5794	114.89	-	-	99.14	35.78	12.21	32.24	100	176	P	V
	5794	106.97	-	-	91.22	35.78	12.21	32.24	100	176	A	V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz
WIFI 802.11ac VHT40 (Harmonic @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT40		11509.5	43.91	-30.09	74	48.01	38.7	17.63	60.43	300	0	P	H
CH 151 5755MHz		11509.5	44.42	-29.58	74	48.52	38.7	17.63	60.43	300	0	P	V
802.11ac VHT40		11589.58	45.08	-28.92	74	49.01	38.75	17.69	60.37	300	0	P	H
CH 159 5795MHz		11589.58	46.05	-27.95	74	49.98	38.75	17.69	60.37	300	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz
WIFI 802.11ac VHT80 (Band Edge @ 3m)

Table with 14 columns: WIFI Ant. 1+2, Note, Frequency (MHz), Level (dBµV/m), Over Limit (dB), Limit Line (dBµV/m), Read Level (dBµV), Antenna Factor (dB/m), Path Loss (dB), Preamp Factor (dB), Ant Pos (cm), Table Pos (deg), Peak Avg. (P/A), Pol. (H/V). Rows include frequencies from 5631.6 to 5961.2 MHz.

Remark

- 1. No other spurious found.
2. All results are PASS against Peak and Average limit line.



Band 4 5725~5850MHz

WIFI 802.11ac VHT80 (Harmonic @ 3m)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11ac VHT80		11549.54	45	-29	74	49	38.73	17.66	60.39	300	0	P	H
CH 155 5775MHz		11549.54	45.08	-28.92	74	49.08	38.73	17.66	60.39	300	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

Emission below 1GHz

5GHz WIFI 802.11ac VHT80 (LF)

WIFI Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
5GHz 802.11ac VHT80 LF		167.74	32.87	-10.63	43.5	46.73	17.08	1.97	32.91	-	-	P	H
		191.99	33.96	-9.54	43.5	48.41	16.49	2.11	33.05	100	360	P	H
		217.21	31.33	-14.67	46	44.82	17.37	2.24	33.1	-	-	P	H
		266.68	30.11	-15.89	46	40.98	19.67	2.49	33.03	-	-	P	H
		571.26	27.14	-18.86	46	30.32	25.73	3.65	32.56	-	-	P	H
		791.45	28.83	-17.17	46	30.23	26.83	4.3	32.53	-	-	P	H
		167.74	33.77	-9.73	43.5	47.63	17.08	1.97	32.91	100	360	P	V
		217.21	31.63	-14.37	46	45.12	17.37	2.24	33.1	-	-	P	V
		408.3	26.49	-19.51	46	33.33	22.86	3.08	32.78	-	-	P	V
		608.12	26.89	-19.11	46	30.1	25.56	3.76	32.53	-	-	P	V
	838.98	29.21	-16.79	46	30.23	27.14	4.42	32.58	-	-	P	V	
	900.09	32.54	-13.46	46	33.05	27.4	4.59	32.5	-	-	P	V	
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Note symbol

*	Fundamental Frequency which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is over limit line.
P/A	Peak or Average
H/V	Horizontal or Vertical



A calculation example for radiated spurious emission is shown as below:

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
2. Level(dBμV/m) = Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
3. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)
= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)
= 55.45 (dBμV/m)
2. Over Limit(dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 55.45(dBμV/m) – 74(dBμV/m)
= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)
= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)
= 43.54 (dBμV/m)
2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)
= 43.54(dBμV/m) – 54(dBμV/m)
= -10.46(dB)

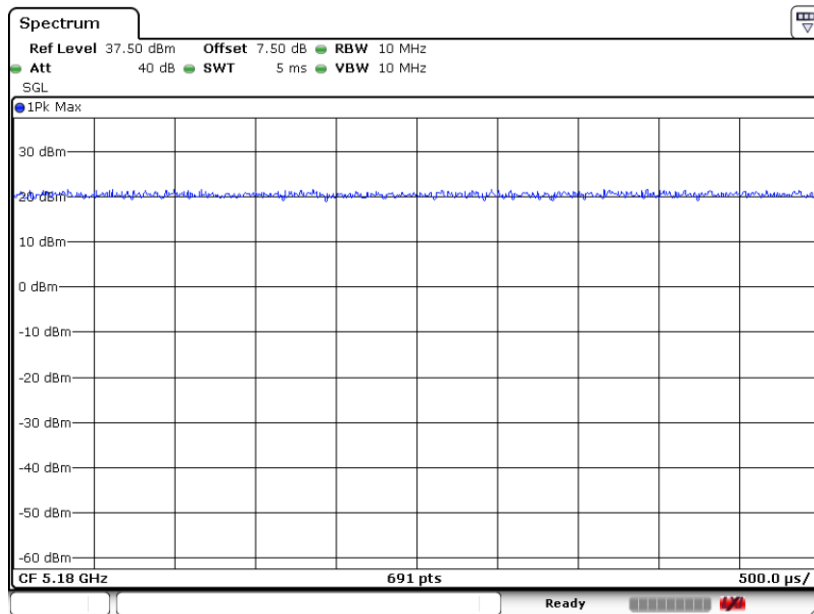
Both peak and average measured complies with the limit line, so test result is “PASS”.



Appendix D. Duty Cycle Plots

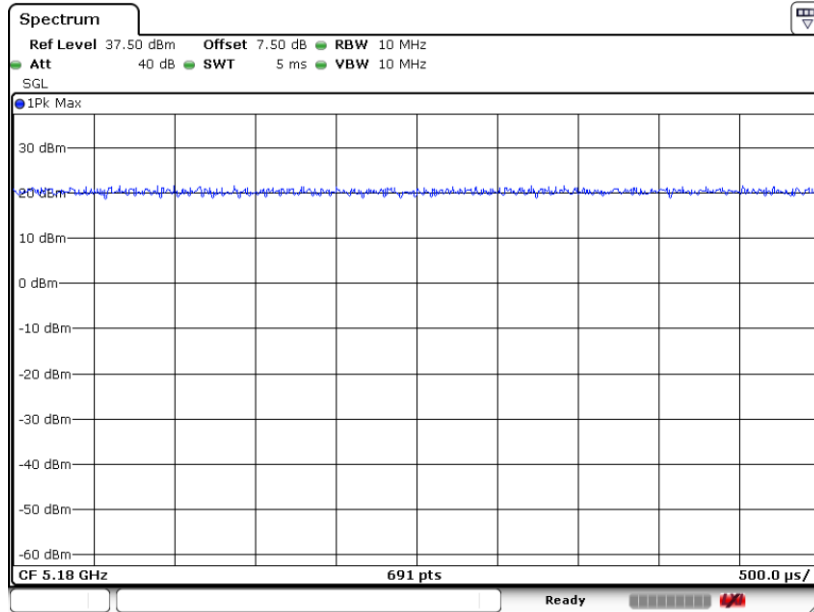
Antenna	Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
1+2	802.11a	100	-	-	10Hz
1+2	802.11ac VHT20	100	-	-	10Hz
1+2	802.11ac VHT40	100	-	-	10Hz
1+2	802.11ac VHT80	100	-	-	10Hz

802.11a

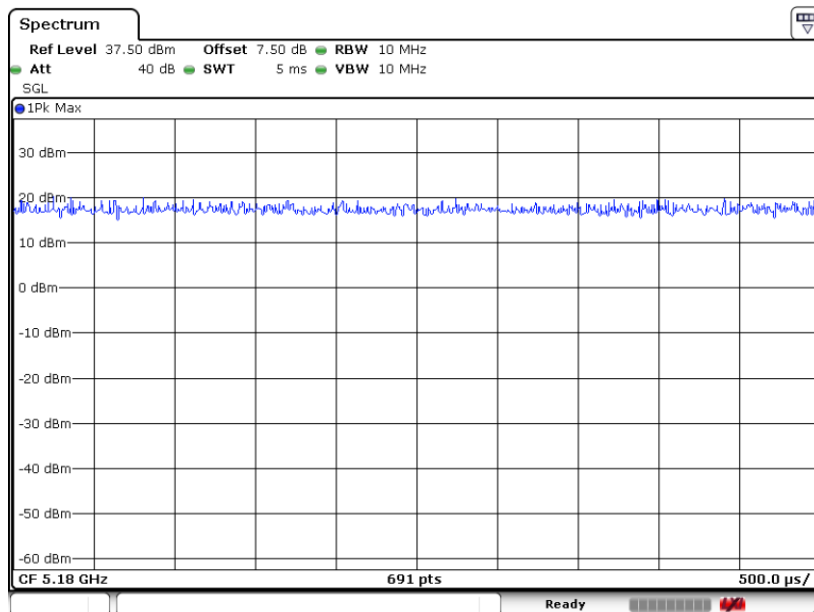




802.11ac VHT20



802.11ac VHT40





802.11ac VHT80

