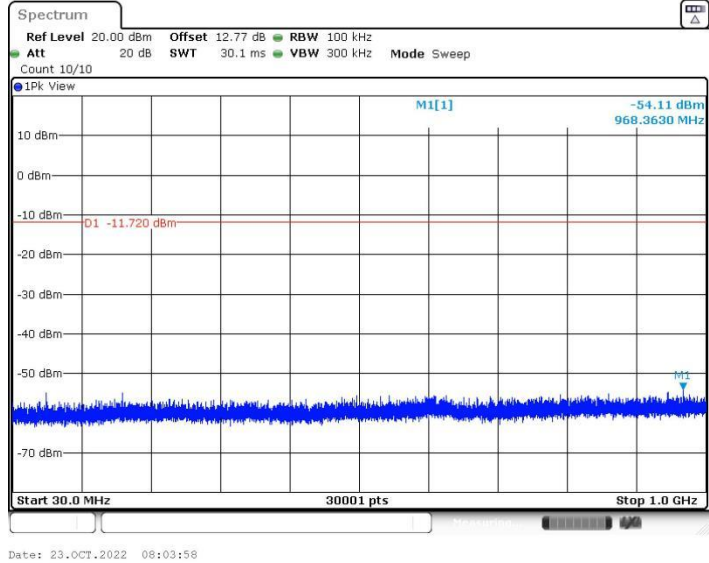
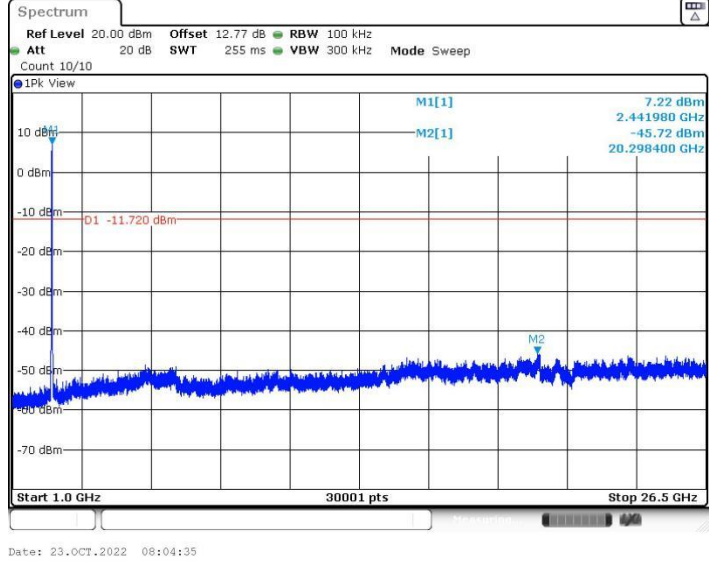




11N20SISO_Ant1_2437_30~1000

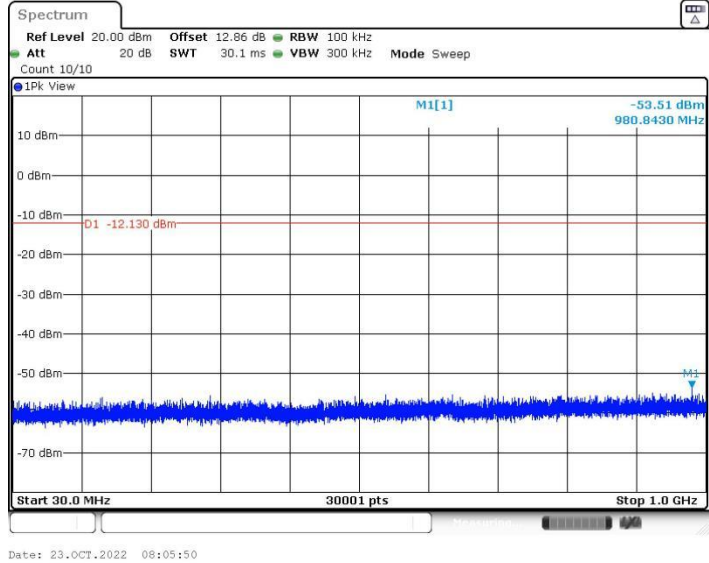


11N20SISO_Ant1_2437_1000~26500

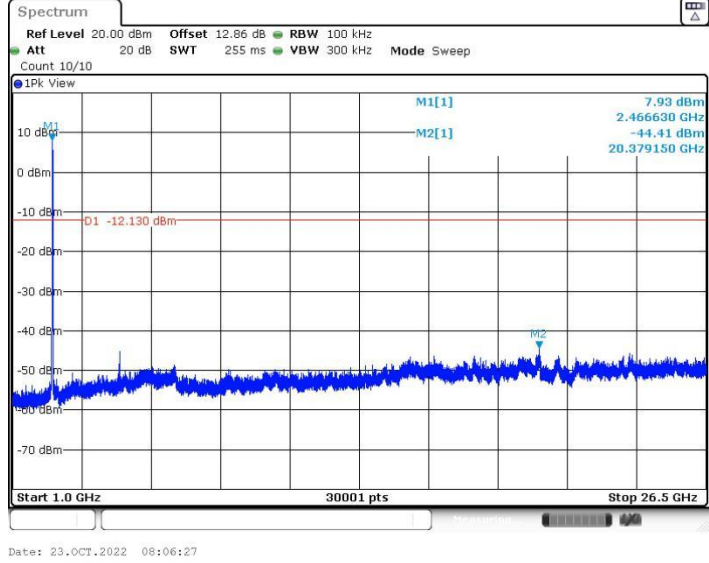




11N20SISO_Ant1_2462_30~1000



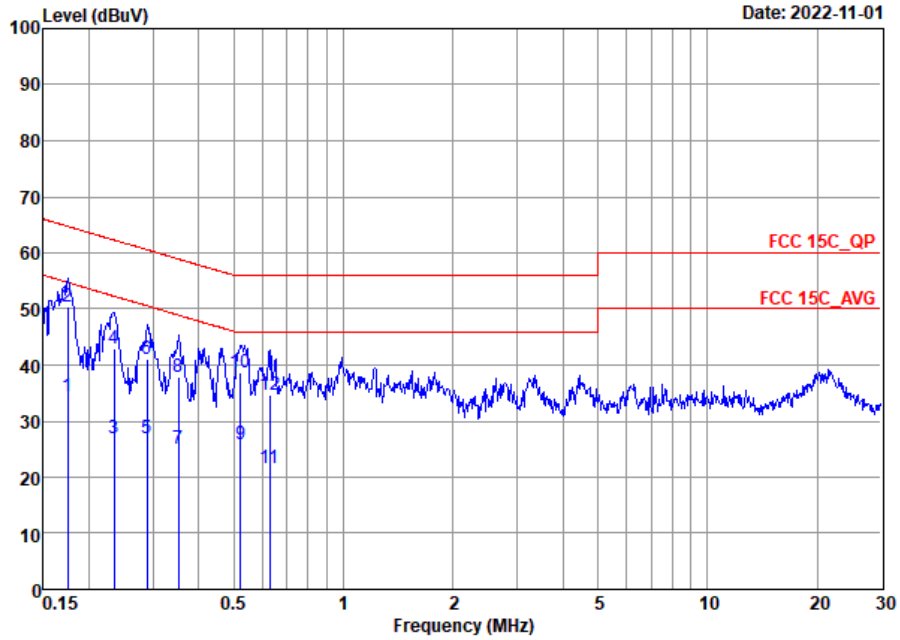
11N20SISO_Ant1_2462_1000~26500





Appendix B. AC Conducted Emission Test Results

Test Engineer :	Yuki Tang	Temperature :	21~24°C
		Relative Humidity :	39~43%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

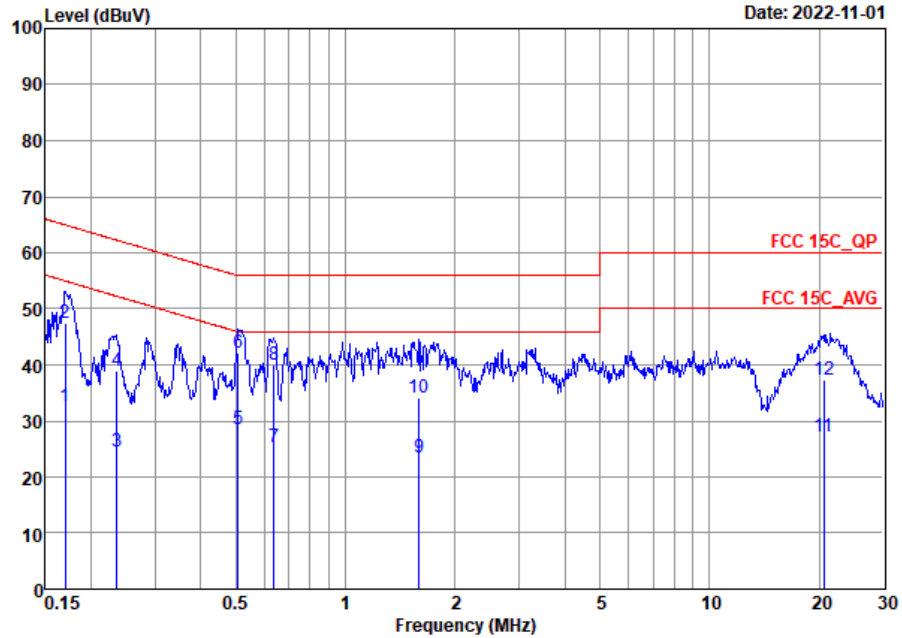


Site : CO01-SZ
 Condition: FCC 15C_QP LISN_20220811_ L LINE

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.17	34.37	-20.35	54.72	13.70	10.20	10.47	Average
2 *	0.17	50.47	-14.25	64.72	29.80	10.20	10.47	QP
3	0.23	26.94	-25.36	52.30	6.30	10.19	10.45	Average
4	0.23	43.04	-19.26	62.30	22.40	10.19	10.45	QP
5	0.29	26.81	-23.73	50.54	5.80	10.16	10.85	Average
6	0.29	41.11	-19.43	60.54	20.10	10.16	10.85	QP
7	0.35	24.99	-23.92	48.91	3.70	10.08	11.21	Average
8	0.35	37.99	-20.92	58.91	16.70	10.08	11.21	QP
9	0.52	25.78	-20.22	46.00	3.89	10.12	11.77	Average
10	0.52	38.68	-17.32	56.00	16.79	10.12	11.77	QP
11	0.63	21.55	-24.45	46.00	0.10	10.12	11.33	Average
12	0.63	34.75	-21.25	56.00	13.30	10.12	11.33	QP



Test Engineer :	Yuki Tang	Temperature :	21~24°C
		Relative Humidity :	39~43%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : C001-SZ
 Condition: FCC 15C QP LISN 20220811 N NEUTRAL

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.17	32.44	-22.50	54.94	11.60	10.31	10.53	Average
2	0.17	47.34	-17.60	64.94	26.50	10.31	10.53	QP
3	0.24	24.41	-27.85	52.26	3.70	10.26	10.45	Average
4	0.24	38.91	-23.35	62.26	18.20	10.26	10.45	QP
5	0.51	28.52	-17.48	46.00	6.51	10.19	11.82	Average
6 *	0.51	42.12	-13.88	56.00	20.11	10.19	11.82	QP
7	0.64	25.22	-20.78	46.00	3.70	10.23	11.29	Average
8	0.64	39.92	-16.08	56.00	18.40	10.23	11.29	QP
9	1.59	23.47	-22.53	46.00	3.00	10.23	10.24	Average
10	1.59	34.27	-21.73	56.00	13.80	10.23	10.24	QP
11	20.59	27.26	-22.74	50.00	7.11	9.80	10.35	Average
12	20.59	37.36	-22.64	60.00	17.21	9.80	10.35	QP

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

Test Engineer :	Zhaohui Liang	Temperature :	24~25°C
		Relative Humidity :	48~49%

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		2387.175	47.16	-26.84	74	39.81	32.25	7.8	32.7	171	226	P	H
		2388.645	37.79	-16.21	54	30.43	32.26	7.8	32.7	171	226	A	H
		2412	101.52	—	—	94.11	32.31	7.8	32.7	171	226	P	H
		2412	99.77	—	—	92.36	32.31	7.8	32.7	171	226	A	H
		2389.065	48.29	-25.71	74	40.93	32.26	7.8	32.7	325	266	P	V
		2389.065	38.52	-15.48	54	31.16	32.26	7.8	32.7	325	266	A	V
		2412	103.66	—	—	96.25	32.31	7.8	32.7	325	266	P	V
		2412	102.05	—	—	94.64	32.31	7.8	32.7	325	266	A	V
802.11b CH 06 2437MHz		2375.8	48.12	-25.88	74	40.9	32.23	7.69	32.7	123	316	P	H
		2389.8	36.21	-17.79	54	28.85	32.26	7.8	32.7	123	316	A	H
		2437	96.83	—	—	89.33	32.36	7.84	32.7	123	316	P	H
		2437	95.04	—	—	87.54	32.36	7.84	32.7	123	316	A	H
		2494.54	47.48	-26.52	74	39.81	32.49	7.88	32.7	123	316	P	H
		2484.11	36.12	-17.88	54	28.47	32.47	7.88	32.7	123	316	A	H
		2342.76	47.2	-26.8	74	40.17	32.15	7.58	32.7	251	242	P	V
		2387.7	36.21	-17.79	54	28.86	32.25	7.8	32.7	251	242	A	V
		2437	100.22	—	—	92.72	32.36	7.84	32.7	251	242	P	V
		2437	98.6	—	—	91.1	32.36	7.84	32.7	251	242	A	V
		2485.65	47.71	-26.29	74	40.06	32.47	7.88	32.7	251	242	P	V
		2484.46	36.15	-17.85	54	28.5	32.47	7.88	32.7	251	242	A	V



802.11b CH 11 2462MHz	2462	96.57	—	—	89.01	32.42	7.84	32.7	145	317	P	H
	2462	95.28	—	—	87.72	32.42	7.84	32.7	145	317	A	H
	2499.08	47.29	-26.71	74	39.61	32.5	7.88	32.7	145	317	P	H
	2484.56	36.63	-17.37	54	28.98	32.47	7.88	32.7	145	317	A	H
	2462	101.07	—	—	93.51	32.42	7.84	32.7	245	240	P	V
	2462	99.44	—	—	91.88	32.42	7.84	32.7	245	240	A	V
	2484.6	47.89	-26.11	74	40.24	32.47	7.88	32.7	245	240	P	V
	2484.52	37.11	-16.89	54	29.46	32.47	7.88	32.7	245	240	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.											



**2.4GHz 2400~2483.5MHz
WIFI 802.11b (Harmonic @ 3m)**

WIFI	Note	Frequency (MHz)	Level (dBμV/m)	Margin (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)
802.11b CH 01 2412MHz		4824	51.65	-22.35	74	57.88	34.83	11.08	52.14	232	236	P	H
		4824	47.72	-6.28	54	53.95	34.83	11.08	52.14	232	236	A	H
		4824	52.4	-21.6	74	58.63	34.83	11.08	52.14	269	37	P	V
		4824	49.13	-4.87	54	55.36	34.83	11.08	52.14	269	37	A	V
802.11b CH 06 2437MHz		4874	47.13	-26.87	74	53.46	33.73	12.04	52.1			P	H
		7311	47.54	-26.46	74	49.41	35.76	14.16	51.79			P	H
		4874	50.85	-23.15	74	57.18	33.73	12.04	52.1	242	77	P	V
		4874	45.32	-8.68	54	51.65	33.73	12.04	52.1	242	77	A	V
802.11b CH 11 2462MHz		4924	49.77	-24.23	74	55.83	34.87	11.13	52.06			P	H
		7386	47.47	-26.53	74	49.68	36.35	13.14	51.7			P	H
		4924	51.09	-22.91	74	57.15	34.87	11.13	52.06	273	50	P	V
		4924	47.66	-6.34	54	53.72	34.87	11.13	52.06	273	50	A	V
		7386	47.06	-26.94	74	49.27	36.35	13.14	51.7			P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



**2.4GHz 2400~2483.5MHz
WIFI 802.11g (Band Edge @ 3m)**

WIFI	Note	Frequency (MHz)	Level (dBμV/m)	Margin (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)
802.11g CH 01 2412MHz		2389.905	61.07	-12.93	74	53.71	32.26	7.8	32.7	100	235	P	H
		2389.905	45.22	-8.78	54	37.86	32.26	7.8	32.7	100	235	A	H
		2412	102.73	—	—	95.32	32.31	7.8	32.7	100	235	P	H
		2412	95.69	—	—	88.28	32.31	7.8	32.7	100	235	A	H
		2389.905	61.61	-12.39	74	54.25	32.26	7.8	32.7	167	240	P	V
		2389.905	45.42	-8.58	54	38.06	32.26	7.8	32.7	167	240	A	V
		2412	104.47	—	—	97.06	32.31	7.8	32.7	167	240	P	V
		2412	97.95	—	—	90.54	32.31	7.8	32.7	167	240	A	V
802.11g CH 06 2437MHz		2384.62	47.12	-26.88	74	39.77	32.25	7.8	32.7	100	238	P	H
		2389.94	36.95	-17.05	54	29.59	32.26	7.8	32.7	100	238	A	H
		2437	102.45	—	—	94.95	32.36	7.84	32.7	100	238	P	H
		2437	95.39	—	—	87.89	32.36	7.84	32.7	100	238	A	H
		2483.9	46.7	-27.3	74	39.06	32.46	7.88	32.7	100	238	P	H
		2486.28	36.94	-17.06	54	29.29	32.47	7.88	32.7	100	238	A	H
		2389.24	47.07	-26.93	74	39.71	32.26	7.8	32.7	170	268	P	V
		2389.8	37.14	-16.86	54	29.78	32.26	7.8	32.7	170	268	A	V
		2437	106.75	—	—	99.25	32.36	7.84	32.7	170	268	P	V
		2437	99.02	—	—	91.52	32.36	7.84	32.7	170	268	A	V
		2499.09	47.1	-26.9	74	39.42	32.5	7.88	32.7	170	268	P	V
	2483.58	37.11	-16.89	54	29.47	32.46	7.88	32.7	170	268	A	V	
802.11g CH 11 2462MHz		2462	103.28	—	—	95.72	32.42	7.84	32.7	100	234	P	H
		2462	95.92	—	—	88.36	32.42	7.84	32.7	100	234	A	H
		2484.36	55.91	-18.09	74	48.26	32.47	7.88	32.7	100	234	P	H
		2483.52	42.29	-11.71	54	34.65	32.46	7.88	32.7	100	234	A	H
		2462	104.83	—	—	97.27	32.42	7.84	32.7	161	241	P	V
		2462	97.77	—	—	90.21	32.42	7.84	32.7	161	241	A	V
		2484.16	58.01	-15.99	74	50.36	32.47	7.88	32.7	161	241	P	V
		2483.64	43.15	-10.85	54	35.51	32.46	7.88	32.7	161	241	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz
WIFI 802.11g (Harmonic @ 3m)

Table with 14 columns: WIFI, Note, Frequency (MHz), Level (dBµV/m), Margin (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 data for 802.11g CH 01, CH 06, and CH 11, plus a Remark section.



**2.4GHz 2400~2483.5MHz
WIFI 802.11n HT20 (Band Edge @ 3m)**

WIFI	Note	Frequency (MHz)	Level (dBμV/m)	Margin (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)
802.11n HT20 CH 01 2412MHz		2389.905	62.2	-11.8	74	54.84	32.26	7.8	32.7	100	234	P	H
		2389.695	47.16	-6.84	54	39.8	32.26	7.8	32.7	100	234	A	H
		2412	102.87	—	—	95.46	32.31	7.8	32.7	100	234	P	H
		2412	95.38	—	—	87.97	32.31	7.8	32.7	100	234	A	H
		2389.905	63.93	-10.07	74	56.57	32.26	7.8	32.7	143	239	P	V
		2389.905	49.32	-4.68	54	41.96	32.26	7.8	32.7	143	239	A	V
		2412	105.04	—	—	97.63	32.31	7.8	32.7	143	239	P	V
		2412	97.81	—	—	90.4	32.31	7.8	32.7	143	239	A	V
802.11n HT20 CH 06 2437MHz		2387.84	47.48	-26.52	74	40.13	32.25	7.8	32.7	100	237	P	H
		2388.96	36.99	-17.01	54	29.63	32.26	7.8	32.7	100	237	A	H
		2437	102.57	—	—	95.07	32.36	7.84	32.7	100	237	P	H
		2437	94.75	—	—	87.25	32.36	7.84	32.7	100	237	A	H
		2490.41	46.63	-27.37	74	38.97	32.48	7.88	32.7	100	237	P	H
		2484.6	36.86	-17.14	54	29.21	32.47	7.88	32.7	100	237	A	H
		2389.66	46.69	-27.31	74	39.33	32.26	7.8	32.7	169	268	P	V
		2389.38	37.28	-16.72	54	29.92	32.26	7.8	32.7	169	268	A	V
		2437	106.91	—	—	99.41	32.36	7.84	32.7	169	268	P	V
		2437	99.14	—	—	91.64	32.36	7.84	32.7	169	268	A	V
802.11n HT20 CH 11 2462MHz		2462	102.03	—	—	94.47	32.42	7.84	32.7	100	234	P	H
		2462	94.99	—	—	87.43	32.42	7.84	32.7	100	234	A	H
		2483.56	59.07	-14.93	74	51.43	32.46	7.88	32.7	100	234	P	H
		2483.56	42.88	-11.12	54	35.24	32.46	7.88	32.7	100	234	A	H
		2462	103.97	—	—	96.41	32.42	7.84	32.7	187	249	P	V
		2462	96.7	—	—	89.14	32.42	7.84	32.7	187	249	A	V
		2483.52	59.83	-14.17	74	52.19	32.46	7.88	32.7	187	249	P	V
		2483.64	43.74	-10.26	54	36.1	32.46	7.88	32.7	187	249	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

Table with 14 columns: WIFI, Note, Frequency (MHz), Level (dBµV/m), Margin (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 test results for channels 01, 06, and 11, and a final Remark section.



Emission below 1GHz

2.4GHz WIFI 802.11n HT20 (LF)

WIFI	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz 802.11n HT20 LF		46.49	19.72	-20.28	40	33.45	19.62	1.61	34.96			P	H
		150.28	29.24	-14.26	43.5	42.63	18.98	2.33	34.7			P	H
		189.08	30.99	-12.51	43.5	46.45	16.63	2.61	34.7			P	H
		269.59	26.82	-19.18	46	40.21	18.18	3.09	34.66			P	H
		475.23	24.95	-21.05	46	32.96	23.06	3.43	34.5			P	H
		644.98	27.61	-18.39	46	32.23	26.23	3.66	34.51			P	H
		42.61	26.72	-13.28	40	40.67	19.48	1.5	34.93			P	V
		108.57	20.76	-22.74	43.5	37.87	15.61	2.06	34.78			P	V
		180.35	30.4	-13.1	43.5	45.44	17.16	2.5	34.7			P	V
		285.11	22.55	-23.45	46	35.37	18.66	3.15	34.63			P	V
		434.49	24.82	-21.18	46	33.56	22.34	3.42	34.5			P	V
	699.3	28.7	-17.3	46	32.28	27.08	3.74	34.4			P	V	
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



<Co-olation>

2.4GHz 2400~2483.5MHz

WIFI 802.11g (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Margin	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 CH 01 + LTE B13 Link Co-olation	*	2389.8	61.52	-12.48	74	54.16	32.26	7.8	32.7	100	186	P	H
	*	2389.905	46.65	-7.35	54	39.29	32.26	7.8	32.7	100	186	A	H
		2412	101.62	—	—	94.21	32.31	7.8	32.7	100	186	P	H
		2412	94.49	—	—	87.08	32.31	7.8	32.7	100	186	A	H
	*	2389.905	63.11	-10.89	74	55.75	32.26	7.8	32.7	100	232	P	V
	*	2389.905	48.28	-5.72	54	40.92	32.26	7.8	32.7	100	232	A	V
		2412	103.03	—	—	95.62	32.31	7.8	32.7	100	232	P	V
		2412	95.85	—	—	88.44	32.31	7.8	32.7	100	232	A	H
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

WIFI 802.11g (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Margin	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 CH 01 + LTE B13 Link Co-olation		1559.5	44.11	-29.89	74	41.38	29.46	6.39	33.12			P	H
		2339.25	45.91	-28.09	74	38.88	32.15	7.58	32.7			P	H
		3119	43.34	-30.66	74	52.38	34.47	8.76	52.27			P	H
		4824	45.81	-28.19	74	52.04	34.83	11.08	52.14			P	H
		1559.5	44.23	-29.77	74	41.5	29.46	6.39	33.12			P	V
		2339.25	46.65	-27.35	74	39.62	32.15	7.58	32.7			P	V
		3119	44.4	-29.6	74	33.62	34.47	8.76	32.45			P	V
		4824	45.84	-28.16	74	52.07	34.83	11.08	52.14			P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average 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 Margin 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	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.					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. Margin (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. Margin (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. Margin (dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 43.54(dBμV/m) – 54(dBμV/m)
= -10.46(dB)

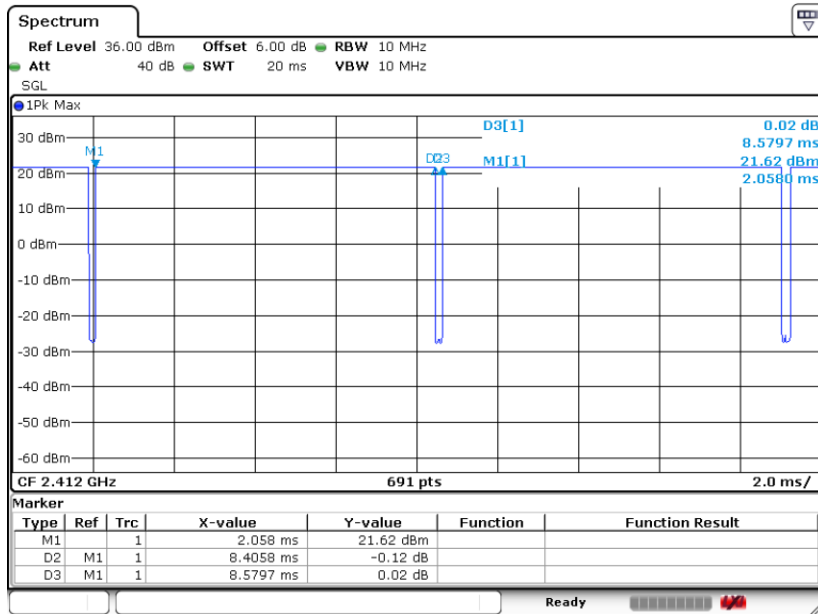
Both peak and average measured complies with the limit line, so test result is “PASS”.



Appendix D. Duty Cycle Plots

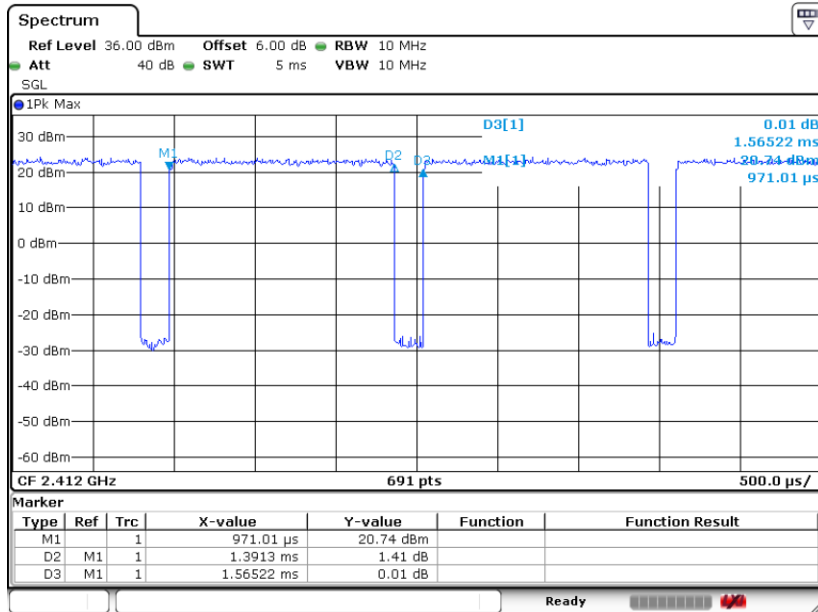
Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11b	97.75	8.406	0.120	300Hz
802.11g	88.89	1.391	0.719	1KHz
802.11n HT20	88.18	1.297	0.771	1KHz

802.11b





802.11g





802.11n HT20

