



Appendix B. Radiated Spurious Emission

2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

BT	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamplifier 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)
BT CH00 2402MHz		2364.08	55.31	-18.69	74	48.12	32.07	6.55	31.43	400	230	P	H
		2364.08	30.55	-23.45	54	-	-	-	-	-	-	A	H
	*	2402	92.94	-	-	85.76	32	6.59	31.41	400	230	P	H
	*	2402	68.18	-	-	-	-	-	-	-	-	A	H
		2336.26	54.66	-19.34	74	47.5	32.1	6.5	31.44	324	196	P	V
		2336.26	29.9	-24.1	54	-	-	-	-	-	-	A	V
	*	2402	94.84	-	-	87.66	32	6.59	31.41	324	196	P	V
	*	2402	70.08	-	-	-	-	-	-	-	-	A	V
BT CH 78 2480MHz		2498.8	54.88	-19.12	74	47.25	32.2	6.81	31.38	372	253	P	H
		2498.8	30.12	-23.88	54	-	-	-	-	-	-	A	H
	*	2480	92.07	-	-	84.38	32.27	6.81	31.39	372	253	P	H
	*	2480	67.31	-	-	-	-	-	-	-	-	A	H
		2484.04	55.2	-18.8	74	47.51	32.27	6.81	31.39	339	196	P	V
		2484.04	30.44	-23.56	54	-	-	-	-	-	-	A	V
	*	2480	94.29	-	-	86.6	32.27	6.81	31.39	339	196	P	V
	*	2480	69.53	-	-	-	-	-	-	-	-	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

BT (Harmonic @ 3m)

BT	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
BT CH 00 2402MHz		4806	36.68	-37.32	74	54.17	34.2	9.9	61.59	100	138	P	H
		4806	36.23	-37.77	74	53.72	34.2	9.9	61.59	100	360	P	V
BT CH 39 2441MHz		4884	37.56	-36.44	74	55.15	34.13	9.89	61.61	100	211	P	H
		7320	38.51	-35.49	74	52.4	36.6	11.85	62.34	100	211	P	H
		4884	36.86	-37.14	74	54.45	34.13	9.89	61.61	100	237	P	V
		7320	38.7	-35.3	74	52.59	36.6	11.85	62.34	100	237	P	V
BT CH 78 2480MHz		4962	37.05	-36.95	74	54.65	34.1	9.94	61.64	100	360	P	H
		7440	38.11	-35.89	74	52.11	36.4	12	62.4	100	360	P	H
		4962	37.04	-36.96	74	54.64	34.1	9.94	61.64	100	360	P	V
		7440	37.35	-36.65	74	51.35	36.4	12	62.4	100	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Emission below 1GHz

2.4GHz BT (LF)

BT	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz BT LF		48.43	15.08	-24.92	40	32.65	14.7	0.69	32.96	-	-	P	H
		111.48	30.46	-13.04	43.5	44.67	17.64	1.08	32.93	100	360	P	H
		162.89	20.45	-23.05	43.5	36.32	15.73	1.35	32.95	-	-	P	H
		245.34	26.96	-19.04	46	40.14	18.09	1.71	32.98	-	-	P	H
		460.68	20.88	-25.12	46	29.06	22.79	2.26	33.23	-	-	P	H
		861.29	25.65	-20.35	46	28.71	26.34	3.13	32.53	-	-	P	H
		46.49	27.53	-12.47	40	44.33	15.5	0.66	32.96	100	0	P	V
		104.69	29.36	-14.14	43.5	44.03	17.21	1.04	32.92	-	-	P	V
		164.83	18.91	-24.59	43.5	34.83	15.68	1.35	32.95	-	-	P	V
		230.79	22.69	-23.31	46	37.54	16.45	1.66	32.96	-	-	P	V
		418	20.12	-25.88	46	29.09	22.03	2.16	33.16	-	-	P	V
		825.4	26.48	-19.52	46	29.98	26.2	3.09	32.79	-	-	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	Cable	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. Level(dBμV/m) =

Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable 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) + Cable 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)

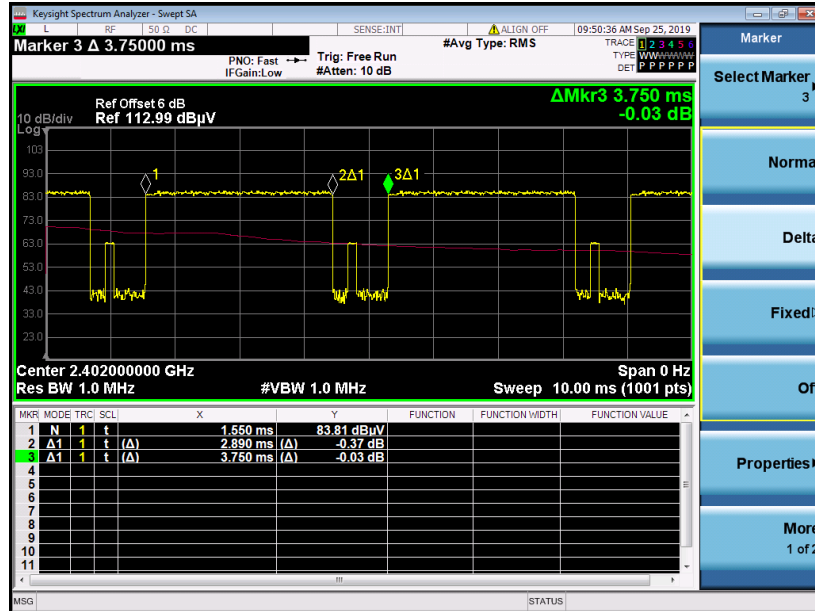
= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

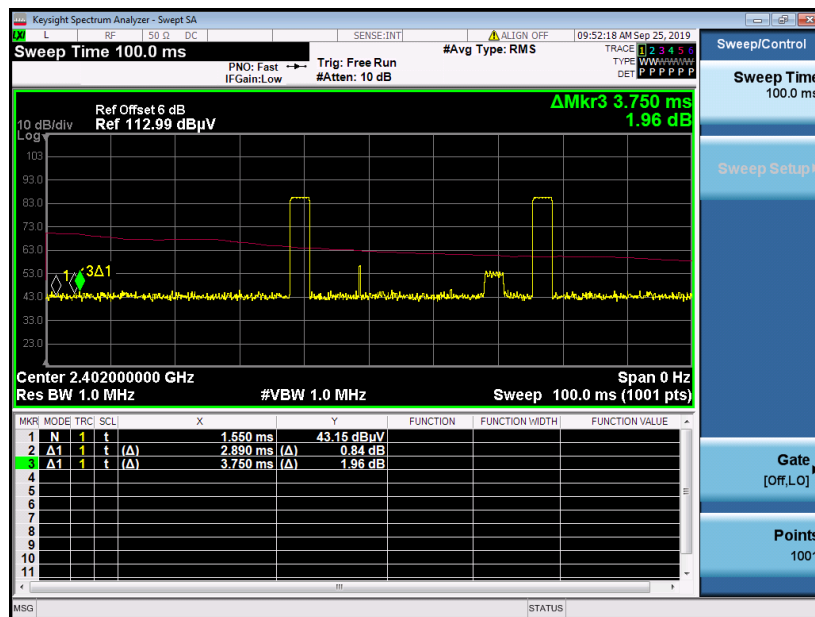
Both peak and average measured complies with the limit line, so test result is “PASS”.

Appendix C. Duty Cycle Plots

3DH5 on time (One Pulse) Plot on Channel 39



3DH5 on time (Count Pulses) Plot on Channel 39



Note:

1. Worst case Duty cycle = on time/100 milliseconds = $2 * 2.89 / 100 = 5.78 \%$
2. Worst case Duty cycle correction factor = $20 * \log(\text{Duty cycle}) = -24.76 \text{ dB}$
3. 3DH5 has the highest duty cycle worst case and is reported.