



Appendix C. 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	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)	
BT CH00 2402MHz		2388.54	50.18	-23.82	74	46.47	27.82	7.8	31.91	100	278	P	H	
		2388.54	25.39	-28.61	54	-	-	-	-	100	278	P	H	
	*	2402	113.22	-	-	109.52	27.79	7.81	31.9	100	278	P	H	
	*	2402	88.43	-	-	-	-	-	-	100	278	A	H	
		2325.85	43.87	-30.13	74	40.17	27.95	7.72	31.97	110	340	P	V	
		2325.85	19.08	-34.92	54	-	-	-	-	-	110	340	P	V
	*	2402	101.23	-	-	97.53	27.79	7.81	31.9	110	340	P	V	
	*	2402	76.44	-	-	-	-	-	-	110	340	A	V	
BT CH 39 2441MHz		2374.68	45.21	-28.79	74	41.51	27.85	7.78	31.93	100	281	P	H	
		2374.68	20.42	-33.58	54	-	-	-	-	100	281	P	H	
	*	2441	113.62	-	-	109.98	27.64	7.86	31.86	100	281	P	H	
	*	2441	88.83	-	-	-	-	-	-	100	281	A	H	
		2483.97	45.25	-28.75	74	41.56	27.6	7.91	31.82	100	281	P	H	
		2483.97	20.46	-33.54	54	-	-	-	-	100	281	A	H	
		2369.92	44.56	-29.44	74	40.85	27.86	7.78	31.93	100	340	P	V	
		2369.92	19.77	-34.23	54	-	-	-	-	100	340	P	V	
	*	2441	103.31	-	-	99.67	27.64	7.86	31.86	100	340	P	V	
	*	2441	78.52	-	-	-	-	-	-	100	340	A	V	
		2488.38	43.54	-30.46	74	39.83	27.6	7.92	31.81	100	340	P	V	
		2488.38	18.75	-35.25	54	-	-	-	-	100	340	A	V	



BT CH 78 2480MHz	*	2480	112.26	-	-	108.57	27.6	7.91	31.82	100	280	P	H
	*	2480	87.47	-	-	-	-	-	-	100	280	A	H
		2483.52	59.68	-14.32	74	55.99	27.6	7.91	31.82	100	280	P	H
		2483.52	34.89	-19.11	54	-	-	-	-	100	280	A	H
	*	2480	101.11	-	-	97.42	27.6	7.91	31.82	109	339	P	V
	*	2480	76.32	-	-	-	-	-	-	109	339	A	V
		2483.56	49.47	-24.53	74	45.78	27.6	7.91	31.82	109	339	P	V
		2483.56	24.68	-29.32	54	-	-	-	-	109	339	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		4804	44.21	-29.79	74	52.08	31.3	10.37	49.54	151	219	P	H
		4804	19.42	-34.58	54	-	-	-	-	151	219	A	H
		4804	43.78	-30.22	74	51.65	31.3	10.37	49.54	178	97	P	V
		4804	18.99	-35.01	54	-	-	-	-	178	97	A	V
BT CH 39 2441MHz		4882	43.27	-30.73	74	51.05	31.3	10.44	49.52	150	258	P	H
		4882	18.48	-35.52	54	-	-	-	-	150	258	A	H
		7323	47.16	-26.84	74	49.4	36.04	12.11	50.39	152	309	P	H
		7323	22.37	-31.63	54	-	-	-	-	152	309	A	H
		4882	42.76	-31.24	74	50.54	31.3	10.44	49.52	100	211	P	V
		4882	17.97	-36.03	54	-	-	-	-	100	211	A	V
		7323	47.41	-26.59	74	49.65	36.04	12.11	50.39	169	338	P	V
		7323	22.62	-31.38	54	-	-	-	-	169	338	A	V
BT CH 78 2480MHz		4960	44.27	-29.73	74	51.77	31.5	10.51	49.51	118	289	P	H
		4960	19.48	-34.52	54	-	-	-	-	118	289	A	H
		7440	47.8	-26.2	74	49.69	36.34	12.23	50.46	158	273	P	H
		7440	23.01	-30.99	54	-	-	-	-	158	273	A	H
		4960	44.85	-29.15	74	52.35	31.5	10.51	49.51	120	269	P	V
		4960	20.06	-33.94	54	-	-	-	-	120	269	A	V
		7440	47.13	-26.87	74	49.02	36.34	12.23	50.46	184	278	P	V
		7440	22.34	-31.66	54	-	-	-	-	184	278	A	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.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz BT LF		46.49	18.41	-21.59	40	31.06	20.26	2.15	35.06	-	-	P	H
		91.11	22.88	-20.62	43.5	41.74	13.94	2.38	35.18	-	-	P	H
		160.95	24.77	-18.73	43.5	37.96	19.32	2.59	35.1	-	-	P	H
		270.56	26.68	-19.32	46	39.74	18.91	2.99	34.96	-	-	P	H
		399.57	24.28	-21.72	46	33.68	22.09	3.31	34.8	-	-	P	H
		855.47	29.07	-16.93	46	30.64	28.65	4.08	34.3	120	64	P	H
		50.37	22.85	-17.15	40	35.43	20.29	2.23	35.1	-	-	P	V
		91.11	34.93	-8.57	43.5	53.79	13.94	2.38	35.18	174	99	P	V
		162.89	32.53	-10.97	43.5	45.72	19.31	2.6	35.1	-	-	P	V
		256.01	27.9	-18.1	46	41.63	18.37	2.89	34.99	-	-	P	V
		316.15	24.29	-21.71	46	35.87	20.12	3.2	34.9	-	-	P	V
		401.51	24.47	-21.53	46	33.84	22.12	3.31	34.8	-	-	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

- Level(dBμV/m) =
Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
- Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

- 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)
- Over Limit(dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 55.45(dBμV/m) – 74(dBμV/m)
= -18.55(dB)

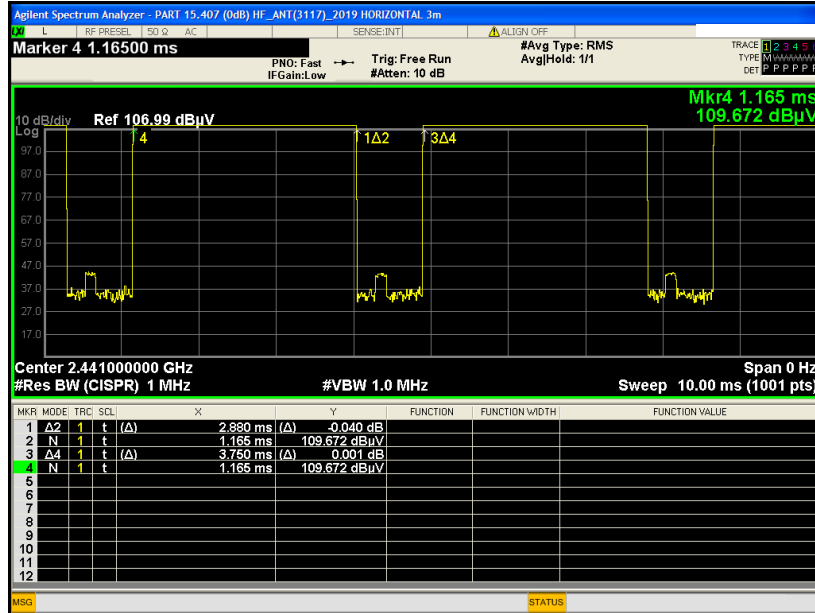
For Average Limit @ 2390MHz:

- 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)
- Over Limit(dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 43.54(dBμV/m) – 54(dBμV/m)
= -10.46(dB)

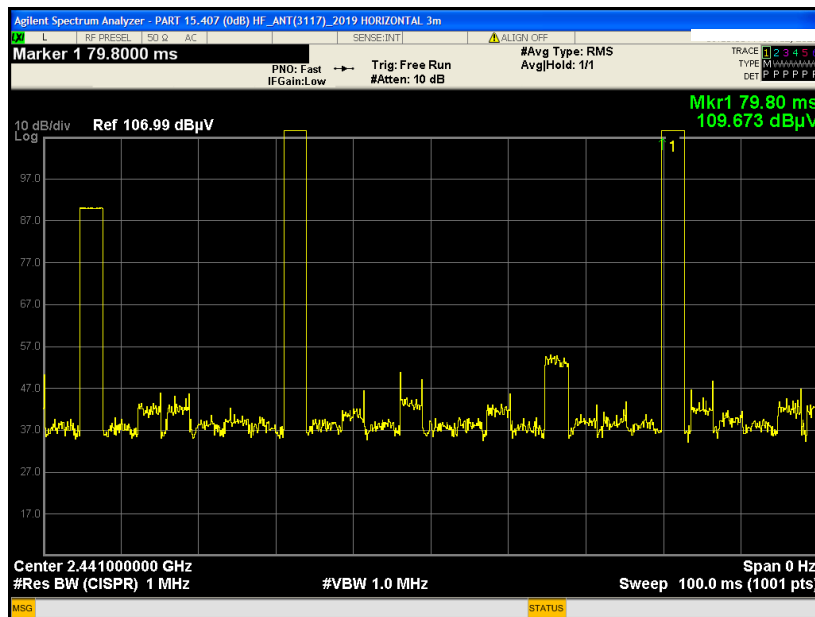
Both peak and average measured complies with the limit line, so test result is “PASS”.

Appendix D. Duty Cycle Plots

DH5 on time (One Pulse) Plot on Channel 39



DH5 on time (Count Pulses) Plot on Channel 39



Note:

1. Worst case Duty cycle = on time/100 milliseconds = $2 * 2.88 / 100 = 5.76 \%$
2. Worst case Duty cycle correction factor = $20 * \log(\text{Duty cycle}) = -24.79 \text{ dB}$
3. DH5 has the highest duty cycle worst case and is reported.