



Appendix A. Radiated Spurious Emission

Test Engineer :	Donny Pang	Temperature :	22~25°C
		Relative Humidity :	42~45%

15C 2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

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)	
BT CH00 2402MHz		2346.4	46.95	-27.05	74	43.55	31.91	6.14	34.65	109	197	P	H	
		2346.4	22.21	-31.79	54	-	-	-	-	-	-	A	H	
	*	2402.04	88.22	-	-	84.71	31.94	6.21	34.64	109	197	P	H	
		2402.04	63.48			-	-	-	-	-	-	A	H	
													H	
													H	
			2327.94	47.4	-26.6	74	44.05	31.9	6.1	34.65	100	90	P	V
			2327.94	22.66	-31.34	54	-	-	-	-	-	-	A	V
	*		2402.17	89.69	-	-	86.18	31.94	6.21	34.64	100	90	P	V
			2402.17	64.95			-	-	-	-	-	-	A	V
														V
														V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.													



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)
BT CH 39 2441MHz		2348.76	47.2	-26.8	74	43.8	31.91	6.14	34.65	102	194	P	H
		2348.76	22.46	-31.54	54	-	-	-	-	-	-	A	H
	*	2441.1	89.3	-	-	85.7	31.97	6.27	34.64	102	194	P	H
		2441.1	64.56			-	-	-	-	-	-	A	H
		2485.75	47.26	-26.74	74	43.6	31.99	6.3	34.63	102	194	P	H
		2485.75	22.52	-31.48	54	-	-	-	-	-	-	A	H
		2343.06	47.06	-26.94	74	43.66	31.91	6.14	34.65	100	91	P	V
		2343.06	22.32	-31.68	54	-	-	-	-	-	-	A	V
	*	2441.1	91.96	-	-	88.36	31.97	6.27	34.64	100	91	P	V
		2441.1	67.22			-	-	-	-	-	-	A	V
		2485.56	46.88	-27.12	74	43.22	31.99	6.3	34.63	100	91	P	V
		2485.56	22.14	-31.86	54							A	V
BT CH 78 2480MHz	*	2480.05	88.05	-	-	84.39	31.99	6.3	34.63	105	191	P	H
		2480.05	63.31			-	-	-	-	-	-	A	H
		2483.5	47.65	-26.35	74	43.99	31.99	6.3	34.63	105	191	P	H
		2483.5	22.91	-31.09	54	-	-	-	-	-	-	A	H
													H
													H
	*	2479.98	89.81	-	-	86.15	31.99	6.3	34.63	101	81	P	V
		2479.98	65.07			-	-	-	-	-	-	A	V
		2483.5	48.99	-25.01	74	45.33	31.99	6.3	34.63	101	81	P	V
		2483.5	24.25	-29.75	54	-	-	-	-	-	-	A	V
												V	
												V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



15C 2.4GHz 2400~2483.5MHz

BT (Harmonic @ 3m)

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)	
BT CH 00 2402MHz		4803	38.79	-35.21	74	56.78	34.35	8.52	60.86	100	0	P	H	
		4803	14.05	-39.95	54	-	-	-	-	-	-	A	H	
													H	
													H	
		4803	38.7	-35.3	74	56.69	34.35	8.52	60.86	100	0	P	V	
		4803	13.96	-40.04	54	-	-	-	-	-	-	-	A	V
														V
														V
BT CH 39 2441MHz		4881	40.07	-33.93	74	57.59	34.4	8.77	60.69	100	0	P	H	
		4881	15.33	-38.67	54	-	-	-	-	-	-	A	H	
		7320	43.04	-30.96	74	55.89	35.73	11.95	60.53	100	0	P	H	
		7320	18.3	-35.7	54	-	-	-	-	-	-	A	H	
		4881	39.74	-34.26	74	57.26	34.4	8.77	60.69	100	0	P	V	
		4881	15	-39	54	-	-	-	-	-	-	A	V	
		7320	42.79	-31.21	74	55.64	35.73	11.95	60.53	100	0	P	V	
		7320	18.05	-35.95	54	-	-	-	-	-	-	A	V	
BT CH 78 2480MHz		4959	39.42	-34.58	74	56.41	34.47	9.02	60.48	100	0	P	H	
		4959	14.68	-39.32	54	-	-	-	-	-	-	A	H	
		7320	43.04	-30.96	74	55.89	35.73	11.95	60.53	100	0	P	H	
		7320	18.3	-35.7	54	-	-	-	-	-	-	A	H	
		4959	39.57	-34.43	74	56.56	34.47	9.02	60.48	100	0	P	V	
		7320	42.79	-31.21	74	55.64	35.73	11.95	60.53	100	0	A	V	
		7320	18.05	-35.95	54	-	-	-	-	-	-	A	V	
														V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.													



15C 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		60.24	19.54	-20.46	40	43.84	6.6	0.87	31.77	-	-	P	H	
		95.34	26.99	-16.51	43.5	47.56	10.1	1.08	31.75	112	154	P	H	
		182.55	19.64	-23.86	43.5	40.75	9.18	1.46	31.75	-	-	P	H	
		455.4	28.32	-17.68	46	40.8	17.08	2.32	31.88	-	-	P	H	
		776	23.55	-22.45	46	32.3	20.16	3.06	31.97	-	-	P	H	
		956.6	25.2	-20.8	46	31.49	21.36	3.35	31	-	-	P	H	
														H
														H
														H
														H
														H
														H
			30	28.08	-11.92	40	40.74	18.5	0.64	31.8	100	325	P	V
			34.05	29.16	-10.84	40	44.17	16.1	0.68	31.79	-	-	P	V
			61.05	24.32	-15.68	40	48.71	6.5	0.88	31.77	-	-	P	V
			455.4	22.26	-23.74	46	34.74	17.08	2.32	31.88	-	-	P	V
			657	23.96	-22.04	46	33.76	19.43	2.81	32.04	-	-	P	V
			851.6	24.01	-21.99	46	31.7	20.8	3.24	31.73	-	-	P	V
														V
														V
													V	
													V	
													V	
													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 per 15.209(c).
!	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”.