

Appendix A. Radiated Spurious Emission

Test Engineer :	Donny Pang	Temperature :	22~24°C
		Relative Humidity :	47~50%

15C 2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

ВТ	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)
		2321.57	46.57	-27.43	74	43.22	31.9	6.1	34.65	103	116	Р	Н
		2321.57	21.84	-32.16	54	-	-	1	-	-	-	Α	Н
	*	2402	99.43	1	-	95.92	31.94	6.21	34.64	103	116	Р	Н
	*	2402	74.7	1	-	-	-	1	-	1	1	Α	Н
D.T.													Н
BT CH00													Н
2402MHz		2359.79	45.29	-28.71	74	41.88	31.92	6.14	34.65	271	236	Р	V
2402111112		2359.79	20.56	-33.44	54	-	-	ı	-	-	-	Α	V
	*	2402	96.25	-	-	92.74	31.94	6.21	34.64	271	236	Р	V
	*	2402	71.52	-	-	-	-	1	-	-	-	Α	V
													V
													V
Remark	1. No	other spurious	s found.										
Kemark	2. All	results are PA	SS against F	eak and	l Average lim	it line.							

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ВТ	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
		2361.11	47.16	-26.84	74	43.75	31.92	6.14	34.65	100	113	Р	Н
		2361.11	22.43	-31.57	54	-	-	-	-	-	-	Α	Н
	*	2441	100.01	-	-	96.41	31.97	6.27	34.64	100	113	Р	Н
	*	2441	75.28	-	-	-	-	-	-	-	1	Α	Н
		2497.91	45.86	-28.14	74	42.15	32	6.34	34.63	100	113	Р	Н
BT		2497.91	21.13	-32.87	54	-	-	-	-	-	-	Α	Н
CH 39 2441MHz		2366.43	46.5	-27.5	74	43.06	31.92	6.17	34.65	242	232	Р	٧
244 I IVITIZ		2366.43	21.77	-32.23	54	-	-	-	-	-	-	Α	V
	*	2441	95.65	-	-	92.05	31.97	6.27	34.64	242	232	Р	V
	*	2441	70.92	-	-	-	-	-	-	-	-	Α	V
		2492.59	44.9	-29.1	74	41.19	32	6.34	34.63	242	232	Р	V
		2492.59	20.17	-33.83	54	-	-	-	-	-	-	Α	V
	*	2480	99.64	-	-	95.98	31.99	6.3	34.63	108	112	Р	Н
	*	2480	74.91	-	-	-	-	-	-	-	-	Α	Н
		2483.5	60.71	-13.29	74	57.05	31.99	6.3	34.63	108	112	Р	Н
		2483.5	35.98	-18.02	54	-	-	-	-	-	-	Α	Н
													Н
BT													Н
CH 78	*	2480	95.88	-	-	92.22	31.99	6.3	34.63	238	191	Р	V
2480MHz	*	2480	71.15	-	-	-	-	-	-	-	-	Α	V
		2483.5	57.42	-16.58	74	53.76	31.99	6.3	34.63	238	191	Р	V
		2483.5	32.69	-21.31	54	-	-	-	-	-	-	Α	V
													V
													V
Remark		o other spurious		Peak and	Average lim	it line			1			ı	

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15C 2.4GHz 2400~2483.5MHz

BT (Harmonic @ 3m)

ВТ	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)
		4803	37.22	-36.78	74	55.21	34.35	8.52	60.86	100	0	Р	Н
		4803	12.49	-41.51	54	-	-	-	-	-	-	Α	Н
													Н
BT													Н
CH 00 2402MHz		4803	36.61	-37.39	74	54.6	34.35	8.52	60.86	100	0	Р	V
2402WII 12		4803	11.88	-42.12	54	1	-	1	-	-	-	Α	V
													V
													V
		4881	36.76	-37.24	74	54.28	34.4	8.77	60.69	100	0	Р	Н
		4881	12.03	-41.97	54	ı	1	1	-	-	-	Α	Н
		7323	40.45	-33.55	74	53.3	35.73	11.95	60.53	100	0	Р	Н
BT CH 39		7323	15.72	-38.28	54	1	•	1	-	-	-	Α	Н
2441MHz		4881	36.77	-37.23	74	54.29	34.4	8.77	60.69	100	0	Р	V
2441111112		4881	12.04	-41.96	54	-	-	-	-	-	-	Α	V
		7323	41.47	-32.53	74	54.32	35.73	11.95	60.53	100	0	Р	V
		7323	16.74	-37.26	54	-	-	-	-	-	-	Α	V
		4959	38.95	-35.05	74	55.94	34.47	9.02	60.48	100	0	Р	Н
		4959	14.22	-39.78	54	-	-	-	-	-	-	Α	Н
DT		7440	41.23	-32.77	74	54.09	35.71	12.01	60.58	100	0	Р	Н
BT CH 70		7440	16.5	-37.5	54	-	-	-	-	-	-	Α	Н
CH 78 2480MHz		4959	37.98	-36.02	74	54.97	34.47	9.02	60.48	100	0	Р	V
		4959	13.25	-40.75	54	-	-	-	-	-	-	Α	V
		7440	40.73	-33.27	74	53.59	35.71	12.01	60.58	100	0	Р	V
		7440	16	-38	54	-	-	-	-	-	-	Α	V
Remark	1. No	other spurious	s found.										
. Coman	2. All	results are PA	SS against F	eak and	l Average lim	it line.							

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15C Emission below 1GHz 2.4GHz BT

(LF @ 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)	
		146.64	23.27	-20.23	43.5	42.87	10.82	1.33	31.75	-	-	Р	Н
		287.04	29.34	-16.66	46	46.27	12.94	1.85	31.72	-	-	Р	Н
		294.6	32.39	-13.61	46	49.18	13.05	1.88	31.72	-	-	Р	Н
		907.6	32.35	-13.65	46	39.94	20.5	3.37	31.46	-	-	Р	Н
		914.6	31.77	-14.23	46	39.3	20.5	3.36	31.39	-	-	Р	Н
		928.6	32.51	-13.49	46	39.83	20.58	3.36	31.26	100	121	Р	Η
													Η
													Н
													Н
													Н
													Н
2.4GHz													Н
BT LF		32.16	17.01	-22.99	40	30.5	17.64	0.66	31.79	-	-	Р	V
LF		47.55	14.7	-25.3	40	36.4	9.3	0.78	31.78	-	-	Р	V
		67.26	18	-22	40	42.69	6.16	0.92	31.77	-	-	Р	V
		867	24.38	-21.62	46	32.4	20.37	3.28	31.67	-	-	Р	V
		902	24.19	-21.81	46	31.83	20.5	3.37	31.51	-	-	Р	V
		937	25.94	-20.06	46	33.1	20.67	3.36	31.19	100	213	Р	V
													V
													V
													V
													V
													V
													V
	1. No	o other spurious	s found.				<u> </u>		<u>I</u>		I	1	1
Remark	2. All	results are PA	SS against li	mit line.									

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Note symbol for Part 15C rule

15C 2.4GHz 2400~2483.5MHz 15C band 4 - 5725~5850MHz

*	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.
@	Frequency falls in non-restricted band is passed and tested by conducted band edges and spurious emission
<u>w</u>	measurement in the test report.
#	Peak measured value is under 20dB and complies with the average limit, so it is unnecessary to perform an average
#	measurement per clause 6.5.4.2 of ANSI C63.10.
P/A	Peak or Average
H/V	Horizontal or Vertical

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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)	(dB _µ V)	(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	Р	Н
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	Α	Н

1. Level($dB\mu V/m$) =

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

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

For Peak Limit @ 2390MHz:

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

For Average Limit @ 2390MHz:

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

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

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