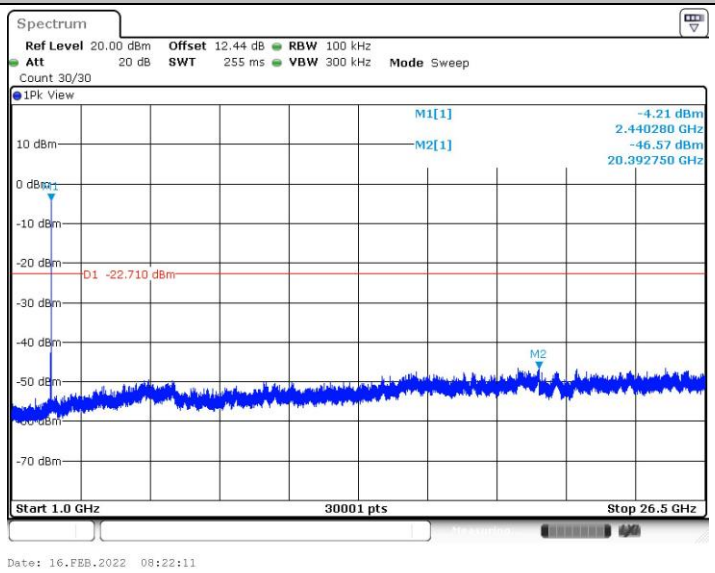
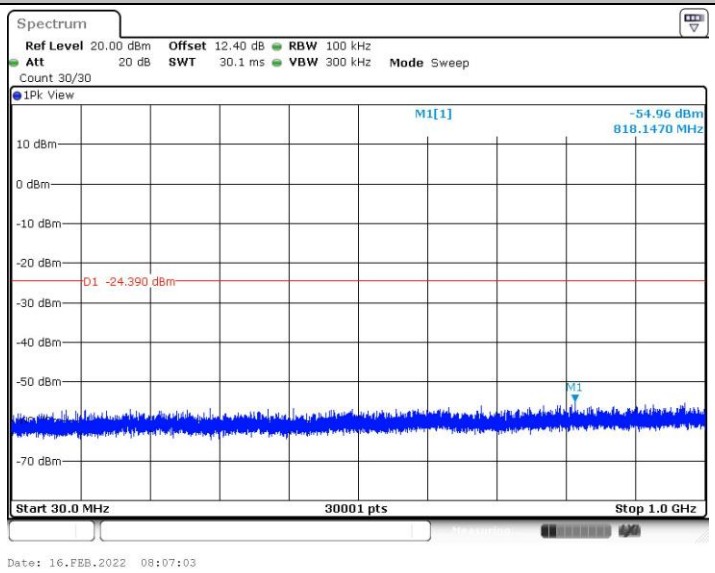
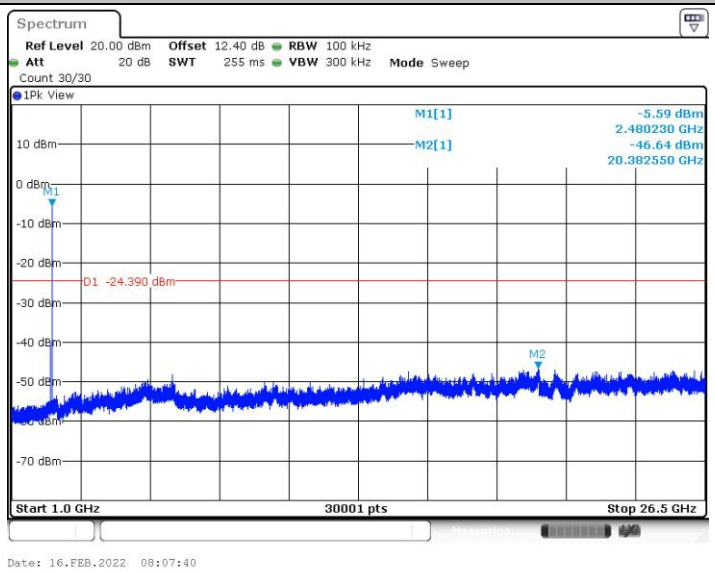
BLE_1M_Ant2_2440_1000~26500



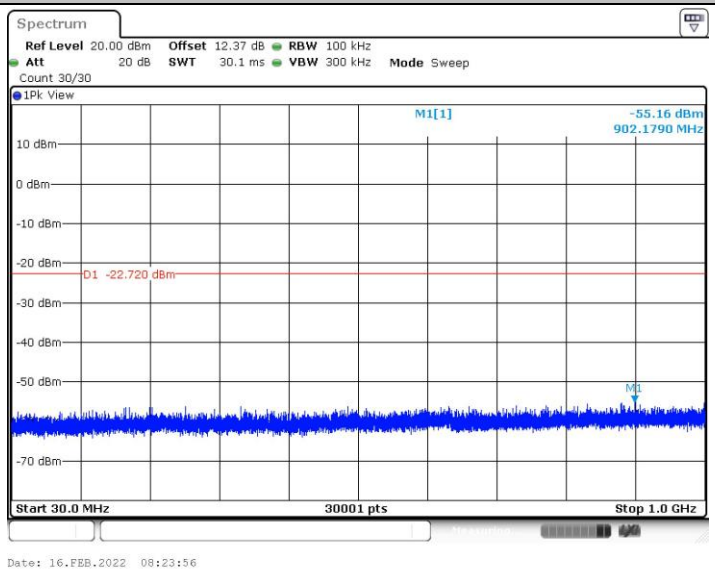
BLE_1M_Ant1_2480_30~1000



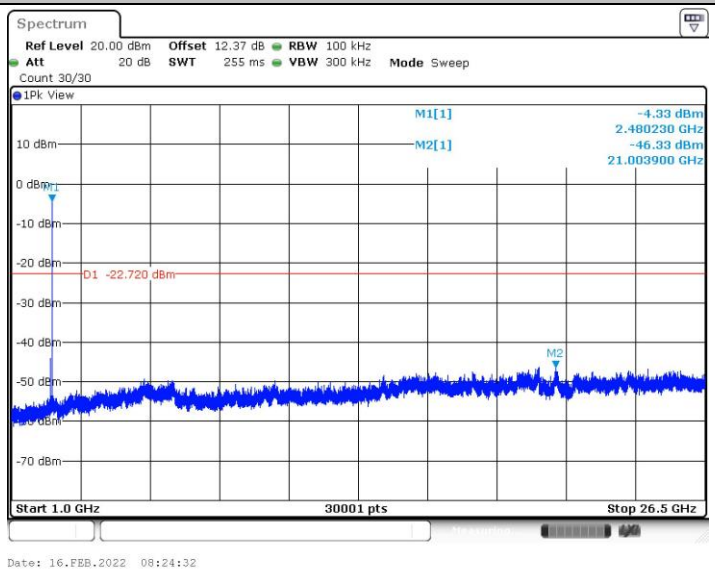
BLE_1M_Ant1_2480_1000~26500



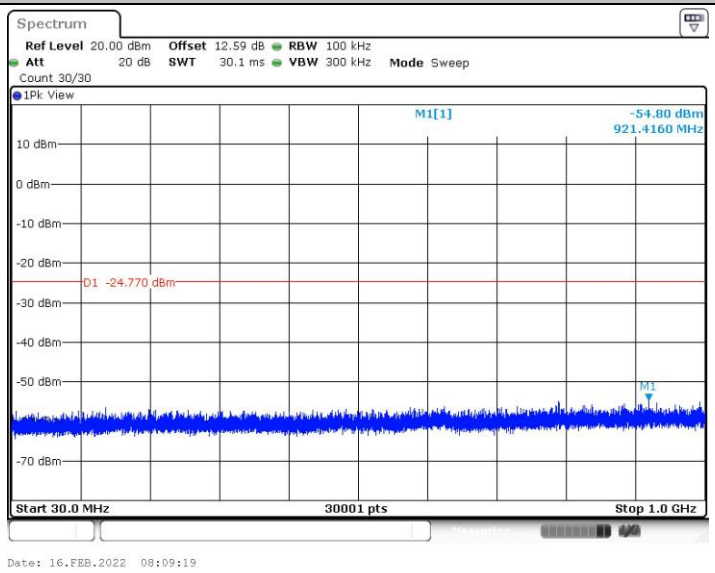
BLE_1M_Ant2_2480_30~1000



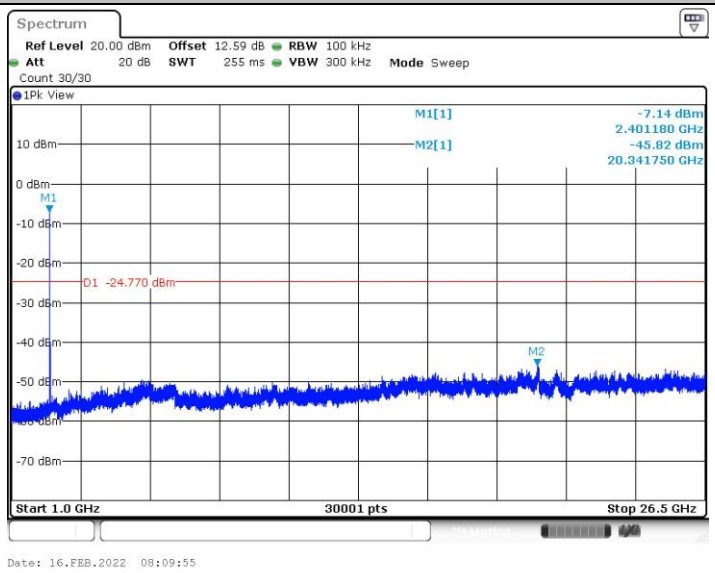
BLE_1M_Ant2_2480_1000~26500



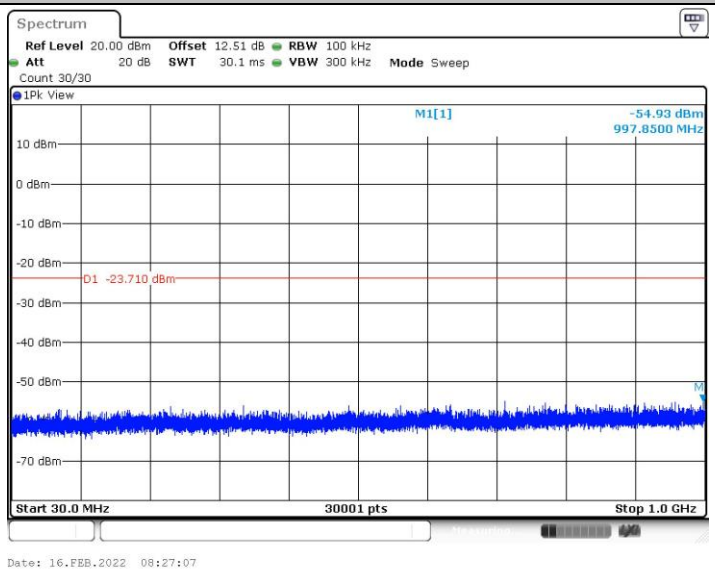
BLE_2M_Ant1_2402_30~1000



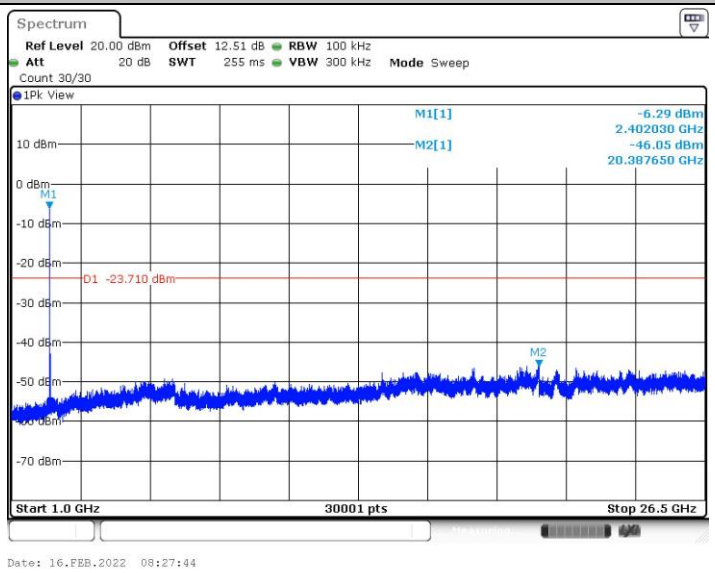
BLE_2M_Ant1_2402_1000~26500



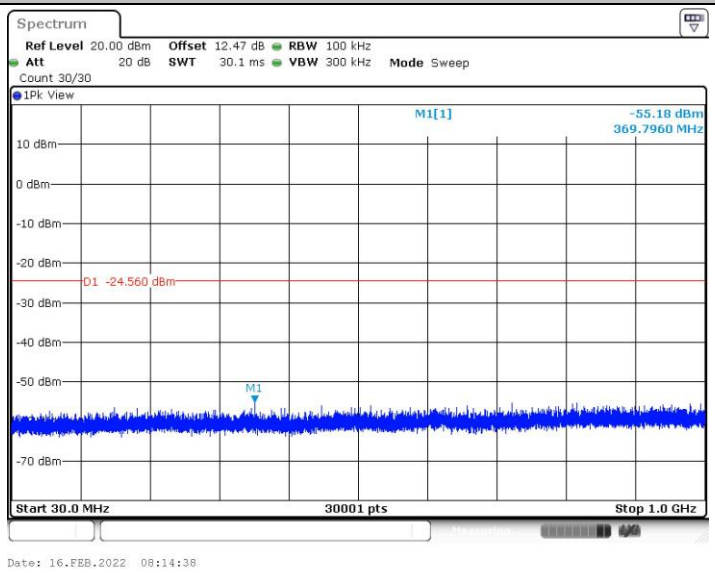
BLE_2M_Ant2_2402_30~1000



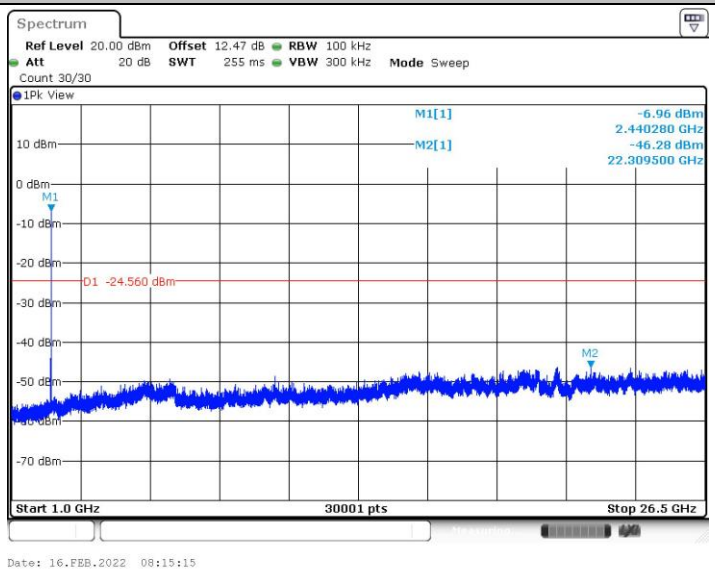
BLE_2M_Ant2_2402_1000~26500



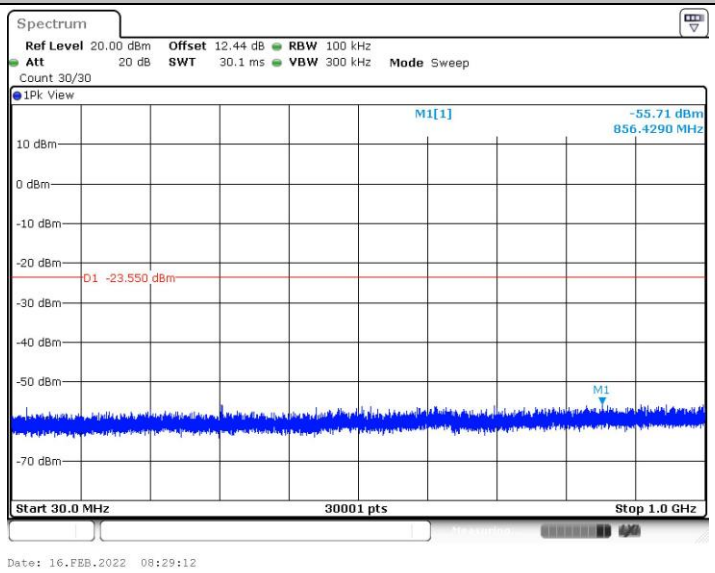
BLE_2M_Ant1_2440_30~1000



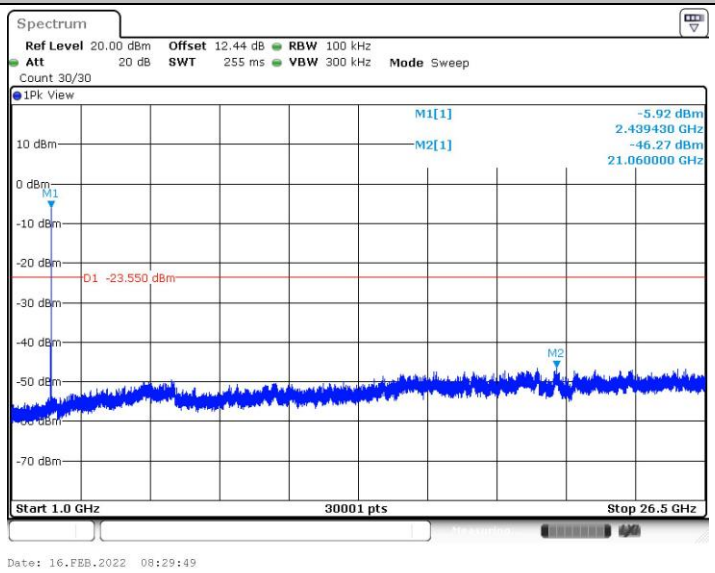
BLE_2M_Ant1_2440_1000~26500



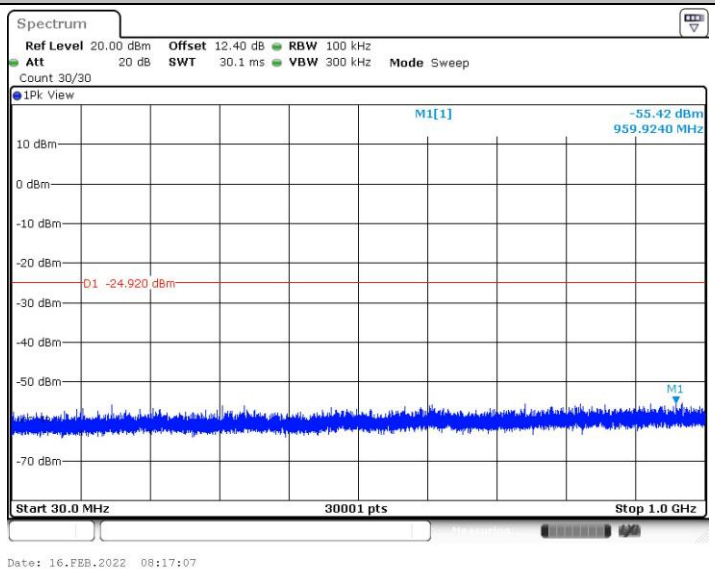
BLE_2M_Ant2_2440_30~1000



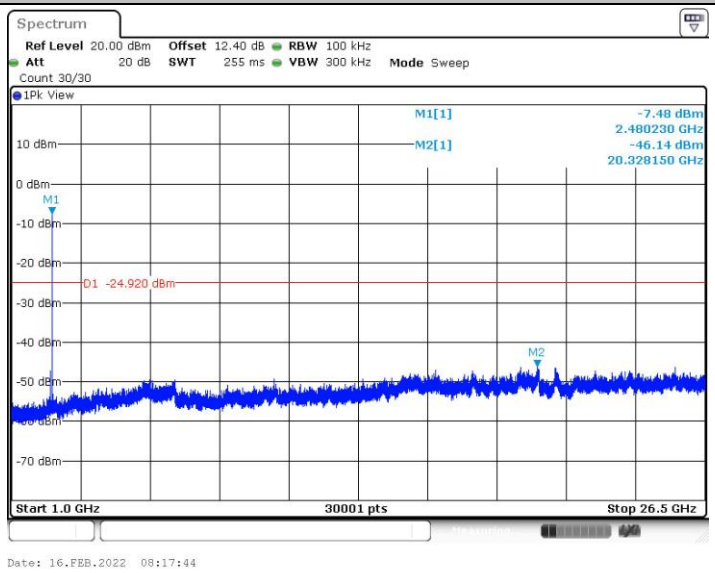
BLE_2M_Ant2_2440_1000~26500



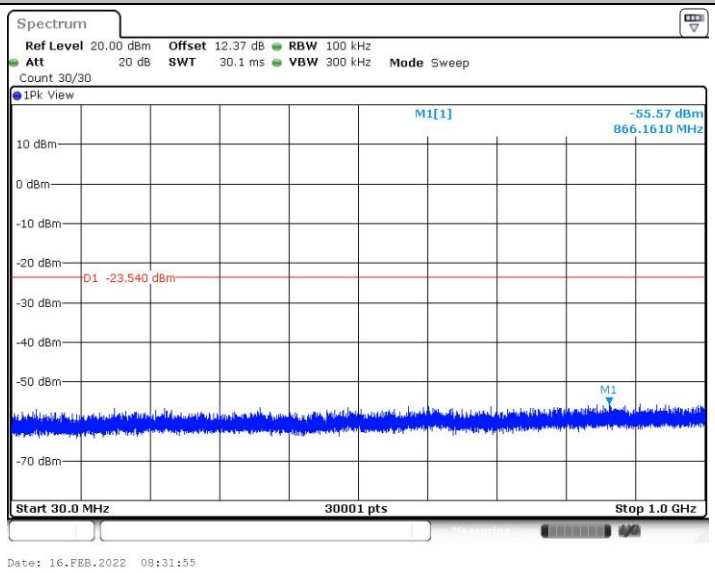
BLE_2M_Ant1_2480_30~1000

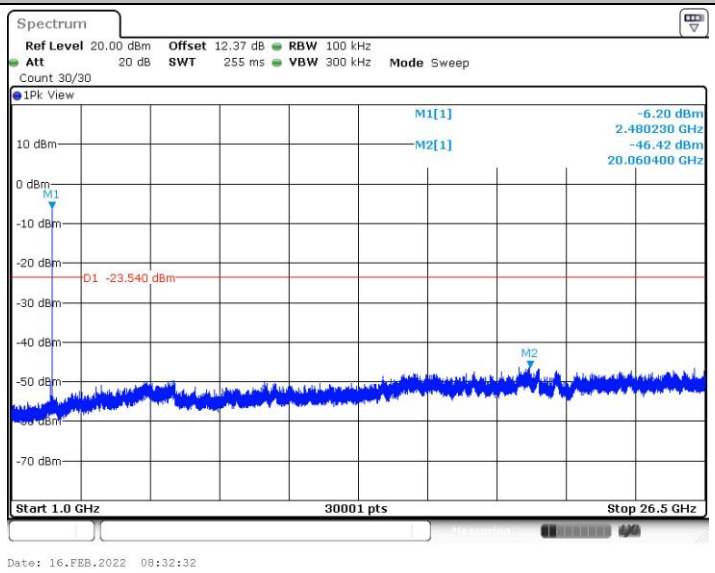


BLE_2M_Ant1_2480_1000~26500



BLE_2M_Ant2_2480_30~1000

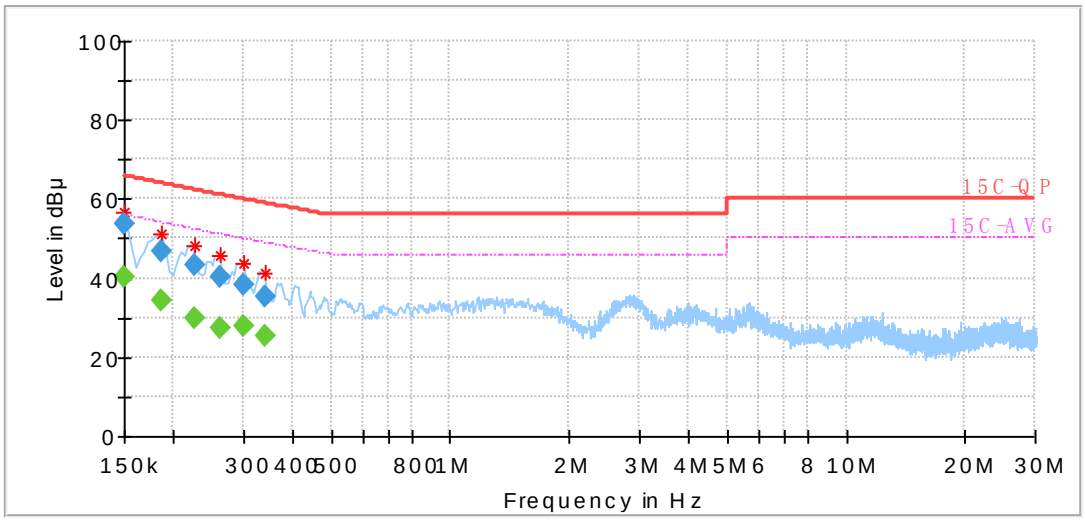


BLE_2M_Ant2_2480_1000~26500


Appendix B. AC Conducted Emission Test Results

Test Engineer :	Amos Zhang	**Temperature :**	25.3~26.2℃
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

Full Spectrum

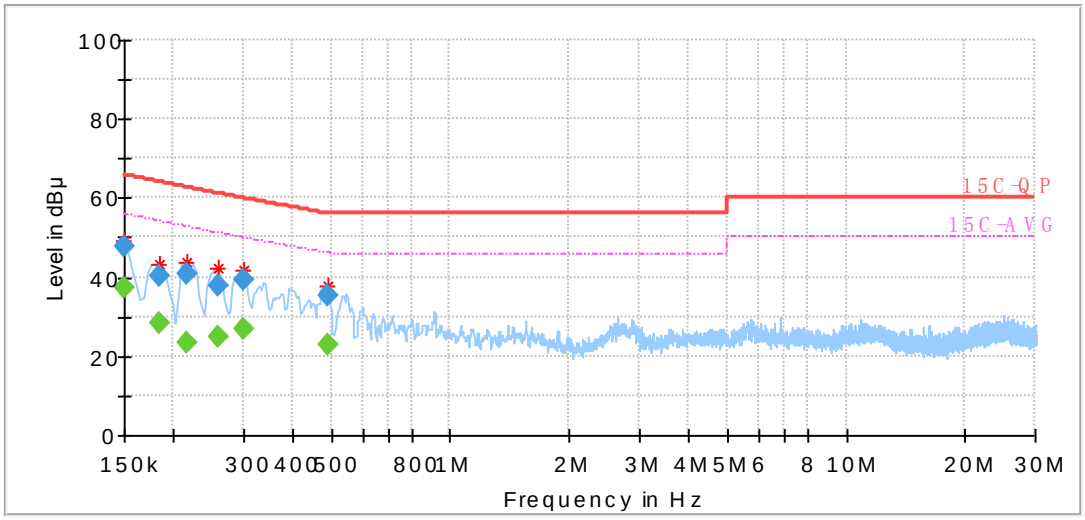


Final_ Result

Frequency (MHz)	QuasiPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.150000	---	40.40	56.00	15.60	L1	OFF	20.1
0.150000	53.71	---	66.00	12.29	L1	OFF	20.1
0.187312	---	34.20	54.00	19.80	L1	OFF	20.0
0.187312	46.73	---	64.03	17.30	L1	OFF	20.0
0.225394	---	29.91	52.40	22.49	L1	OFF	19.9
0.225394	43.08	---	62.43	19.35	L1	OFF	19.9
0.262706	---	27.60	51.10	23.51	L1	OFF	19.9
0.262706	40.05	---	61.14	21.09	L1	OFF	19.9
0.300788	---	28.06	49.98	21.92	L1	OFF	19.9
0.300788	38.35	---	60.02	21.67	L1	OFF	19.9
0.338812	---	25.18	49.02	23.84	L1	OFF	19.9
0.338812	35.18	---	59.05	23.87	L1	OFF	19.9

Test Engineer :	Amos Zhang	**Temperature :**	25.3~26.2℃
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	**Phase :**	Neutral
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

Full Spectrum



Final_ Result

Frequency (MHz)	QuasiPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.150000	---	37.41	56.00	18.59	N	OFF	20.2
0.150000	48.01	---	66.00	17.99	N	OFF	20.2
0.184350	---	28.39	54.15	25.75	N	OFF	20.2
0.184350	40.11	---	64.17	24.06	N	OFF	20.2
0.215681	---	23.59	52.77	29.19	N	OFF	20.2
0.215681	40.75	---	62.81	22.06	N	OFF	20.2
0.258975	---	24.70	51.22	26.52	N	OFF	20.1
0.258975	37.76	---	61.26	23.50	N	OFF	20.1
0.301500	---	26.78	49.96	23.18	N	OFF	20.0
0.301500	39.52	---	60.00	20.48	N	OFF	20.0
0.489544	---	23.05	46.16	23.10	N	OFF	19.9
0.489544	35.22	---	56.16	20.94	N	OFF	19.9

Appendix C. Radiated Spurious Emission

Test Engineer :	Henzy Li	Temperature :	22~23°C
		Relative Humidity :	41~42%

2.4GHz 2400~2483.5MHz

BLE（ANT 1）-1Mbps (Band Edge @ 3m)

BLE	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path 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)
BLE CH 00 2402MHz		2388	53.63	-20.37	74	48.41	30.94	7.16	32.88	114	121	P	H
		2389.82	43.35	-10.65	54	38.09	30.94	7.16	32.84	114	121	A	H
	*	2402	92.79	-	-	87.47	31	7.16	32.84	114	121	P	H
	*	2402	92.03	-	-	86.71	31	7.16	32.84	114	121	A	H
		2344.45	53.89	-20.11	74	48.97	30.77	7.07	32.92	381	77	P	V
		2385.14	43.17	-10.83	54	37.98	30.94	7.13	32.88	381	77	A	V
	*	2402	89.91	-	-	84.59	31	7.16	32.84	381	77	P	V
	*	2402	89.11	-	-	83.79	31	7.16	32.84	381	77	A	V
BLE CH 19 2440MHz		2311.3	54.17	-19.83	74	49.51	30.65	7.01	33	135	125	P	H
		2385.92	43.3	-10.7	54	38.08	30.94	7.16	32.88	135	125	A	H
	*	2440	91.49	-	-	85.96	31.07	7.23	32.77	135	125	P	H
	*	2440	90.54	-	-	85.01	31.07	7.23	32.77	135	125	A	H
		2489.8	54.29	-19.71	74	48.46	31.17	7.3	32.64	135	125	P	H
		2492.08	43.77	-10.23	54	37.87	31.17	7.3	32.57	135	125	A	H
		2361.61	54.08	-19.92	74	49.07	30.83	7.1	32.92	295	64	P	V
		2379.94	43.27	-10.73	54	38.14	30.88	7.13	32.88	295	64	A	V
	*	2440	90.95	-	-	85.42	31.07	7.23	32.77	295	64	P	V
	*	2440	90.2	-	-	84.67	31.07	7.23	32.77	295	64	A	V
		2498.08	54.67	-19.33	74	48.77	31.17	7.3	32.57	295	64	P	V
		2490.88	43.87	-10.13	54	38.04	31.17	7.3	32.64	295	64	A	V

BLE CH 39 2480MHz	*	2480	92.21	-	-	86.45	31.13	7.27	32.64	217	109	P	H
	*	2480	91.38	-	-	85.62	31.13	7.27	32.64	217	109	A	H
		2487.34	55.16	-18.84	74	49.36	31.17	7.27	32.64	217	109	P	H
		2483.5	43.88	-10.12	54	38.12	31.13	7.27	32.64	217	109	A	H
	*	2480	90.77	-	-	85.01	31.13	7.27	32.64	320	73	P	V
	*	2480	89.96	-	-	84.2	31.13	7.27	32.64	320	73	A	V
		2487.16	54.24	-19.76	74	48.44	31.17	7.27	32.64	320	73	P	V
		2483.62	43.88	-10.12	54	38.12	31.13	7.27	32.64	320	73	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

BLE（ANT 1）-1Mbps (Harmonic @ 3m)

BLE	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path 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)
BLE CH 00 2402MHz		4800	41.79	-32.21	74	57.08	34.51	10.24	60.04	300	0	P	H
		4800	42.11	-31.89	74	57.4	34.51	10.24	60.04	100	0	P	V
BLE CH 19 2440MHz		4875	42.06	-31.94	74	57.11	34.66	10.32	60.03	300	0	P	H
		7320	43.79	-30.21	74	54.98	36.56	12.77	60.52	300	0	P	H
		4875	41.09	-32.91	74	56.14	34.66	10.32	60.03	100	0	P	V
		7320	44.24	-29.76	74	55.43	36.56	12.77	60.52	100	0	P	V
BLE CH 39 2480MHz		4965	42.02	-31.98	74	56.79	34.81	10.43	60.01	300	0	P	H
		7440	43.79	-30.21	74	54.86	36.59	12.88	60.54	300	0	P	H
		4965	42.25	-31.75	74	57.02	34.81	10.43	60.01	100	0	P	V
		7440	44.93	-29.07	74	56	36.59	12.88	60.54	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

BLE（ANT 2）-1Mbps (Band Edge @ 3m)

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	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)
BLE CH 00 2402MHz		2381.24	54.13	-19.87	74	49	30.88	7.13	32.88	103	120	P	H
		2389.69	43.38	-10.62	54	38.16	30.94	7.16	32.88	103	120	A	H
	*	2402	93.43	-	-	88.11	31	7.16	32.84	103	120	P	H
	*	2402	92.72	-	-	87.4	31	7.16	32.84	103	120	A	H
		2382.02	53.82	-20.18	74	48.69	30.88	7.13	32.88	392	53	P	V
		2386.57	43.41	-10.59	54	38.19	30.94	7.16	32.88	392	53	A	V
	*	2402	92.48	-	-	87.16	31	7.16	32.84	392	53	P	V
	*	2402	91.74	-	-	86.42	31	7.16	32.84	392	53	A	V
BLE CH 19 2440MHz		2364.21	53.99	-20.01	74	48.98	30.83	7.1	32.92	105	129	P	H
		2387.35	43.38	-10.62	54	38.16	30.94	7.16	32.88	105	129	A	H
	*	2440	94.22	-	-	88.69	31.07	7.23	32.77	105	129	P	H
	*	2440	93.47	-	-	87.94	31.07	7.23	32.77	105	129	A	H
		2497.42	54.65	-19.35	74	48.75	31.17	7.3	32.57	105	129	P	H
		2492.68	43.91	-10.09	54	38.01	31.17	7.3	32.57	105	129	A	H
		2367.59	53.91	-20.09	74	48.81	30.88	7.1	32.88	381	35	P	V
		2387.74	43.34	-10.66	54	38.12	30.94	7.16	32.88	381	35	A	V
	*	2440	90.93	-	-	85.4	31.07	7.23	32.77	381	35	P	V
	*	2440	90.14	-	-	84.61	31.07	7.23	32.77	381	35	A	V
		2484.64	54.68	-19.32	74	48.92	31.13	7.27	32.64	381	35	P	V
		2494.6	43.95	-10.05	54	38.05	31.17	7.3	32.57	381	35	A	V

BLE CH 39 2480MHz	*	2480	93.44	-	-	87.68	31.13	7.27	32.64	106	115	P	H
	*	2480	92.65	-	-	86.89	31.13	7.27	32.64	106	115	A	H
		2490.28	54.41	-19.59	74	48.58	31.17	7.3	32.64	106	115	P	H
		2483.5	44.08	-9.92	54	38.32	31.13	7.27	32.64	106	115	A	H
	*	2480	91.93	-	-	86.17	31.13	7.27	32.64	400	39	P	V
	*	2480	91	-	-	85.24	31.13	7.27	32.64	400	39	A	V
		2491.72	54.11	-19.89	74	48.28	31.17	7.3	32.64	400	39	P	V
		2499.46	44.09	-9.91	54	38.19	31.17	7.3	32.57	400	39	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

BLE（ANT 2）---1Mbps (Harmonic @ 3m)

BLE	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path 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)
BLE CH 00 2402MHz		4800	40.9	-33.1	74	56.19	34.51	10.24	60.04	300	0	P	H
		4800	41.38	-32.62	74	56.67	34.51	10.24	60.04	100	0	P	V
BLE CH 19 2440MHz		4875	41.63	-32.37	74	56.68	34.66	10.32	60.03	300	0	P	H
		7320	44.03	-29.97	74	55.22	36.56	12.77	60.52	300	0	P	H
		4875	41.84	-32.16	74	56.89	34.66	10.32	60.03	100	0	P	V
		7320	44.04	-29.96	74	55.23	36.56	12.77	60.52	100	0	P	V
BLE CH 39 2480MHz		4965	42.33	-31.67	74	57.1	34.81	10.43	60.01	300	0	P	H
		7440	43.18	-30.82	74	54.25	36.59	12.88	60.54	300	0	P	H
		4965	42.7	-31.3	74	57.47	34.81	10.43	60.01	100	0	P	V
		7440	44.58	-29.42	74	55.65	36.59	12.88	60.54	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

BLE（ANT 1）-2Mbps (Band Edge @ 3m)

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	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)
BLE CH 00 2402MHz		2377.73	54.51	-19.49	74	49.38	30.88	7.13	32.88	234	304	P	H
		2387.48	43.64	-10.36	54	38.42	30.94	7.16	32.88	234	304	A	H
	*	2402	92.05	-	-	86.73	31	7.16	32.84	234	304	P	H
	*	2402	90.36	-	-	85.04	31	7.16	32.84	234	304	A	H
		2334.57	53.89	-20.11	74	49.01	30.77	7.07	32.96	292	243	P	V
		2382.41	43.58	-10.42	54	38.45	30.88	7.13	32.88	292	243	A	V
	*	2402	91.31	-	-	85.99	31	7.16	32.84	292	243	P	V
	*	2402	89.71	-	-	84.39	31	7.16	32.84	292	243	A	V
BLE CH 19 2440MHz		2364.21	53.83	-20.17	74	48.82	30.83	7.1	32.92	232	305	P	H
		2382.67	43.79	-10.21	54	38.66	30.88	7.13	32.88	232	305	A	H
	*	2440	91.76	-	-	86.23	31.07	7.23	32.77	232	305	P	H
	*	2440	90.13	-	-	84.6	31.07	7.23	32.77	232	305	A	H
		2489.44	55.08	-18.92	74	49.25	31.17	7.3	32.64	232	305	P	H
		2498.74	44.22	-9.78	54	38.32	31.17	7.3	32.57	232	305	A	H
		2340.55	53.98	-20.02	74	49.06	30.77	7.07	32.92	366	251	P	V
		2389.04	43.57	-10.43	54	38.35	30.94	7.16	32.88	366	251	A	V
	*	2440	91.89	-	-	86.36	31.07	7.23	32.77	366	251	P	V
	*	2440	90.26	-	-	84.73	31.07	7.23	32.77	366	251	A	V
		2497.18	54.63	-19.37	74	48.73	31.17	7.3	32.57	366	251	P	V
		2495.32	44.16	-9.84	54	38.26	31.17	7.3	32.57	366	251	A	V

BLE CH 39 2480MHz	*	2480	91.51	-	-	85.75	31.13	7.27	32.64	170	296	P	H
	*	2480	89.8	-	-	84.04	31.13	7.27	32.64	170	296	A	H
		2497.9	54.7	-19.3	74	48.8	31.17	7.3	32.57	170	296	P	H
		2483.5	44.79	-9.21	54	39.03	31.13	7.27	32.64	170	296	A	H
	*	2480	91.64	-	-	85.88	31.13	7.27	32.64	313	248	P	V
	*	2480	89.93	-	-	84.17	31.13	7.27	32.64	313	248	A	V
		2484.7	54.28	-19.72	74	48.52	31.13	7.27	32.64	313	248	P	V
		2483.5	44.89	-9.11	54	39.13	31.13	7.27	32.64	313	248	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

BLE（ANT 1）-2Mbps (Harmonic @ 3m)

BLE	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path 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)
BLE CH 00 2402MHz		4800	41.23	-32.77	74	56.52	34.51	10.24	60.04	300	0	P	H
		4800	41.04	-32.96	74	56.33	34.51	10.24	60.04	100	0	P	V
BLE CH 19 2440MHz		4875	41.49	-32.51	74	56.54	34.66	10.32	60.03	300	0	P	H
		7320	43.17	-30.83	74	54.36	36.56	12.77	60.52	300	0	P	H
		4875	41.97	-32.03	74	57.02	34.66	10.32	60.03	100	0	P	V
		7320	44.42	-29.58	74	55.61	36.56	12.77	60.52	100	0	P	V
BLE CH 39 2480MHz		4965	42.57	-31.43	74	57.34	34.81	10.43	60.01	300	0	P	H
		7440	43.25	-30.75	74	54.32	36.59	12.88	60.54	300	0	P	H
		4965	42.83	-31.17	74	57.6	34.81	10.43	60.01	100	0	P	V
		7440	44.11	-29.89	74	55.18	36.59	12.88	60.54	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

BLE（ANT 2）-2Mbps (Band Edge @ 3m)

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	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)
BLE CH 00 2402MHz		2376.43	53.95	-20.05	74	48.82	30.88	7.13	32.88	105	128	P	H
		2386.83	43.61	-10.39	54	38.39	30.94	7.16	32.88	105	128	A	H
	*	2402	93.84	-	-	88.52	31	7.16	32.84	105	128	P	H
	*	2402	92.14	-	-	86.82	31	7.16	32.84	105	128	A	H
		2365.38	54.33	-19.67	74	49.28	30.83	7.1	32.88	391	55	P	V
		2387.09	43.57	-10.43	54	38.35	30.94	7.16	32.88	391	55	A	V
	*	2402	92.51	-	-	87.19	31	7.16	32.84	391	55	P	V
	*	2402	90.8	-	-	85.48	31	7.16	32.84	391	55	A	V
BLE CH 19 2440MHz		2338.34	54.4	-19.6	74	49.52	30.77	7.07	32.96	149	119	P	H
		2385.14	43.75	-10.25	54	38.56	30.94	7.13	32.88	149	119	A	H
	*	2440	94.48	-	-	88.95	31.07	7.23	32.77	149	119	P	H
	*	2440	92.83	-	-	87.3	31.07	7.23	32.77	149	119	A	H
		2490.58	54.94	-19.06	74	49.11	31.17	7.3	32.64	149	119	P	H
		2486.08	44.14	-9.86	54	38.34	31.17	7.27	32.64	149	119	A	H
		2365.51	54.55	-19.45	74	49.5	30.83	7.1	32.88	378	27	P	V
		2389.56	43.77	-10.23	54	38.55	30.94	7.16	32.88	378	27	A	V
	*	2440	91.04	-	-	85.51	31.07	7.23	32.77	378	27	P	V
	*	2440	89.28	-	-	83.75	31.07	7.23	32.77	378	27	A	V
		2487.34	55.04	-18.96	74	49.24	31.17	7.27	32.64	378	27	P	V
		2487.22	44.23	-9.77	54	38.43	31.17	7.27	32.64	378	27	A	V

BLE CH 39 2480MHz	*	2480	93.33	-	-	87.57	31.13	7.27	32.64	109	116	P	H
	*	2480	91.68	-	-	85.92	31.13	7.27	32.64	109	116	A	H
		2488.24	54.18	-19.82	74	48.35	31.17	7.3	32.64	109	116	P	H
		2483.5	45.39	-8.61	54	39.63	31.13	7.27	32.64	109	116	A	H
	*	2480	92.35	-	-	86.59	31.13	7.27	32.64	400	42	P	V
	*	2480	90.69	-	-	84.93	31.13	7.27	32.64	400	42	A	V
		2483.92	55.26	-18.74	74	49.5	31.13	7.27	32.64	400	42	P	V
		2483.5	45.26	-8.74	54	39.5	31.13	7.27	32.64	400	42	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

BLE（ANT 2）-2Mbps (Harmonic @ 3m)

BLE	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path 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)
BLE CH 00 2402MHz		4800	41.44	-32.56	74	56.73	34.51	10.24	60.04	300	0	P	H
		4800	41.37	-32.63	74	56.66	34.51	10.24	60.04	100	0	P	V
BLE CH 19 2440MHz		4875	42.08	-31.92	74	57.13	34.66	10.32	60.03	300	0	P	H
		7320	44.04	-29.96	74	55.23	36.56	12.77	60.52	300	0	P	H
		4875	41.53	-32.47	74	56.58	34.66	10.32	60.03	100	0	P	V
		7320	45.13	-28.87	74	56.32	36.56	12.77	60.52	100	0	P	V
BLE CH 39 2480MHz		4965	42.29	-31.71	74	57.06	34.81	10.43	60.01	300	0	P	H
		7440	44.2	-29.8	74	55.27	36.59	12.88	60.54	300	0	P	H
		4965	42.68	-31.32	74	57.45	34.81	10.43	60.01	100	0	P	V
		7440	43.99	-30.01	74	55.06	36.59	12.88	60.54	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission below 1GHz

2.4GHz BLE（ANT 2）-2Mbps (LF)

BLE	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path 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)
2.4GHz BLE LF		30	22.55	-17.45	40	28.05	25.15	0.58	31.23	-	-	P	H
		106.63	28	-15.5	43.5	40.82	17.29	1.68	31.79	-	-	P	H
		194.9	34.6	-8.9	43.5	48.11	15.56	2.27	31.34	-	-	P	H
		337.49	28.74	-17.26	46	37.31	20.1	2.98	31.65	-	-	P	H
		562.53	27.99	-18.01	46	30.52	25.16	3.86	31.55	-	-	P	H
		749.74	29.96	-16.04	46	30.93	25.69	4.45	31.11	-	-	P	H
		39.7	30.37	-9.63	40	41.4	19.9	0.72	31.65	-	-	P	V
		94.02	33.39	-10.11	43.5	46.94	16.84	1.54	31.93	-	-	P	V
		129.91	33.69	-9.81	43.5	45.65	17.74	1.84	31.54	-	-	P	V
		194.9	28.86	-14.64	43.5	41.51	16.42	2.27	31.34	-	-	P	V
		353.01	29.3	-16.7	46	36.41	21.48	3.04	31.63	-	-	P	V
		564.47	30.25	-15.75	46	32.15	25.78	3.86	31.54	-	-	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	**P**eak or **A**verage
H/V	**H**orizontal or **V**ertical

A calculation example for radiated spurious emission is shown as below:

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	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)
BLE CH 00 2402MHz		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		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. Over Limit(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. 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) + 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. 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”.

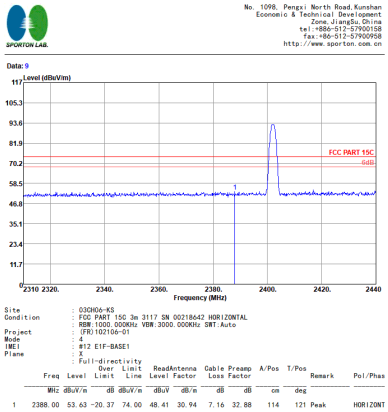
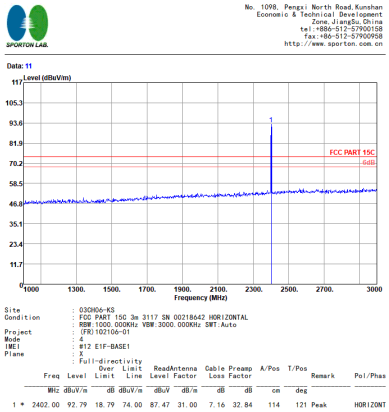
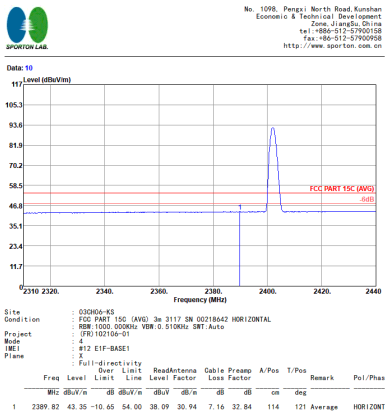
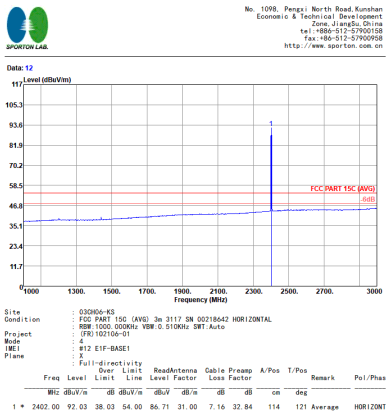
Appendix D. Radiated Spurious Emission Plots

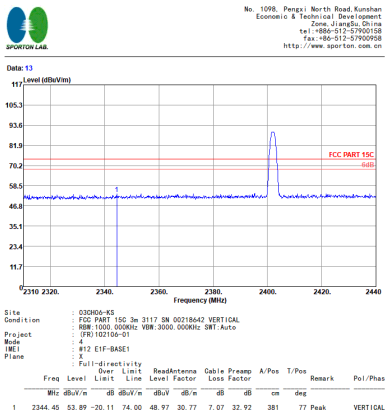
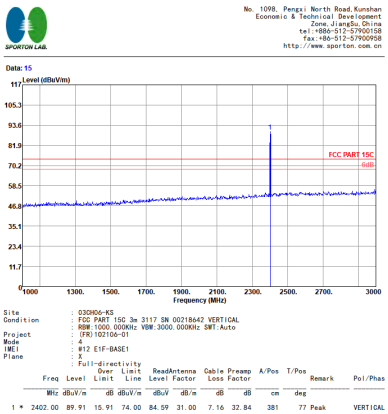
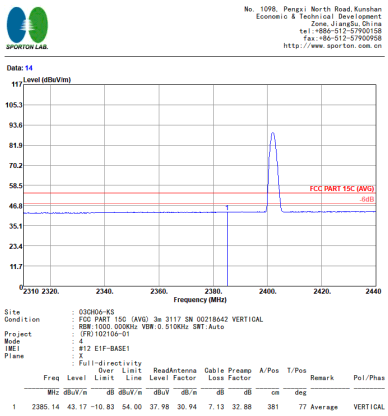
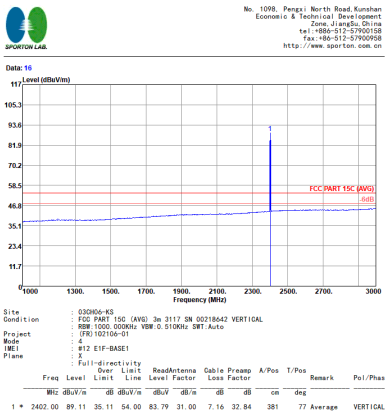
Note symbol

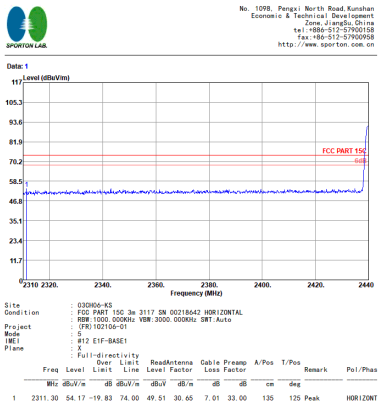
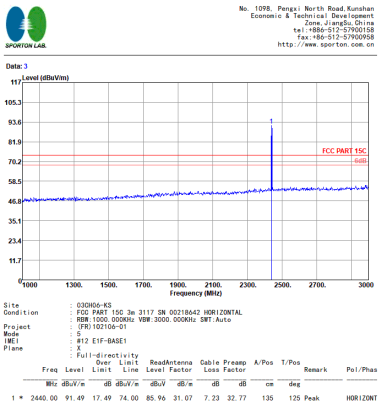
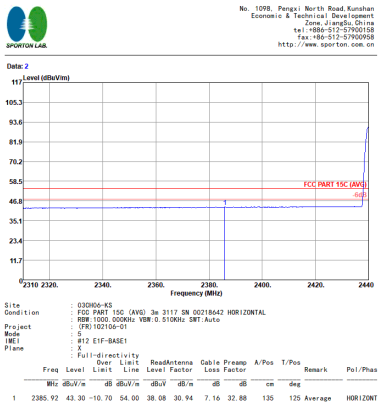
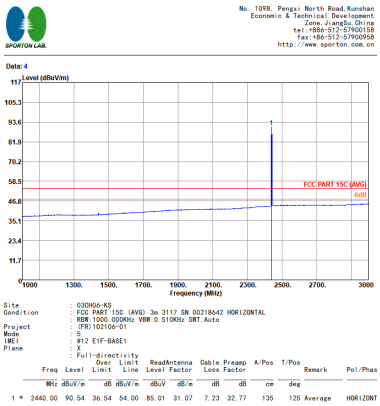
-L	**Low channel location**
-R	**High channel location**

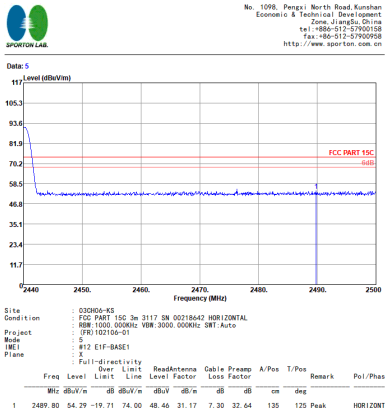
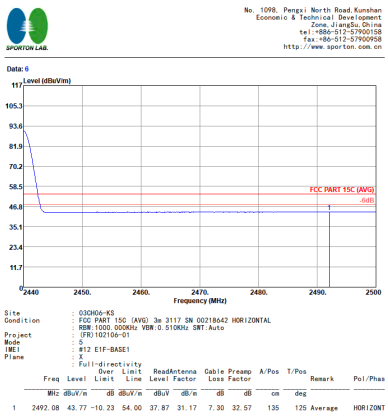
2.4GHz 2400~2483.5MHz

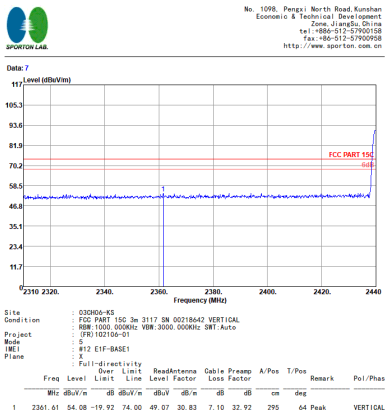
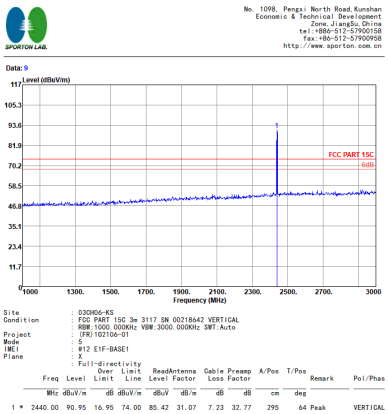
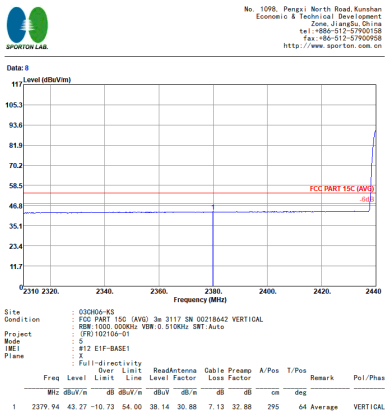
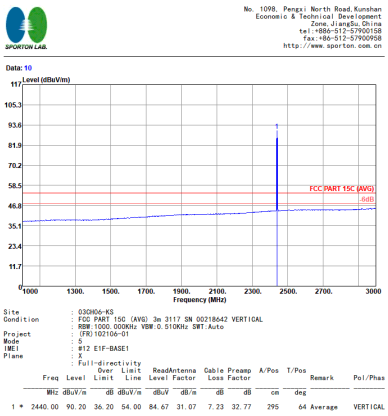
BLE（ANT 1）-1Mbps (Band Edge @ 3m)

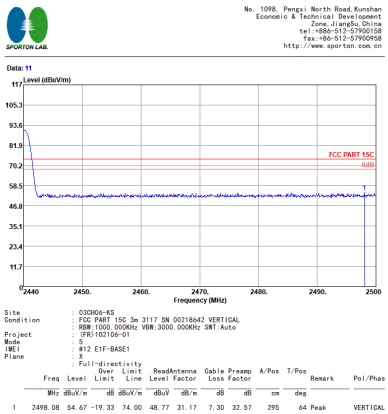
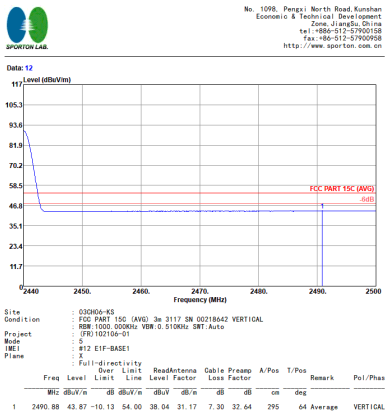
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
1	Horizontal	Fundamental
Peak		
Avg.		

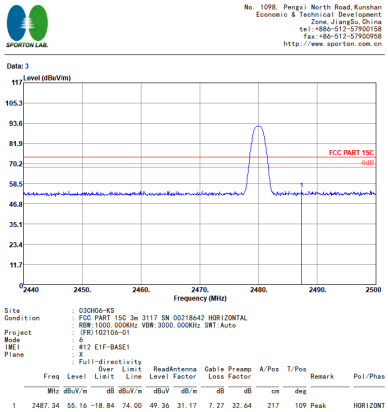
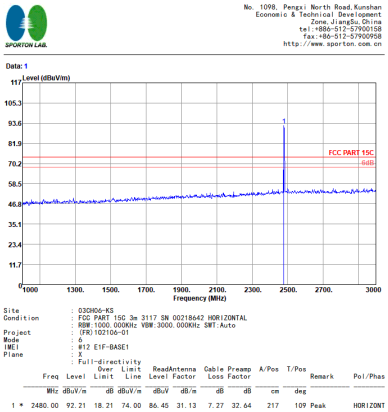
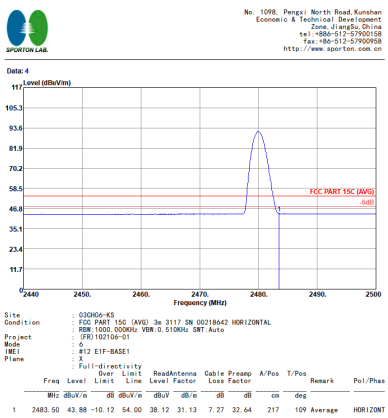
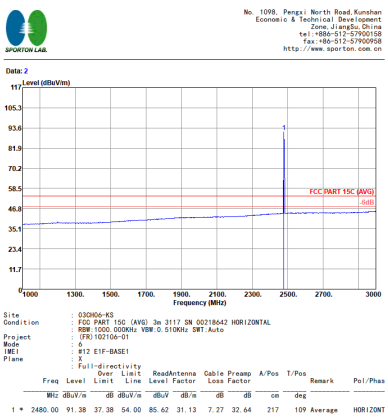
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
1	Vertical	Fundamental
Peak		
Avg		

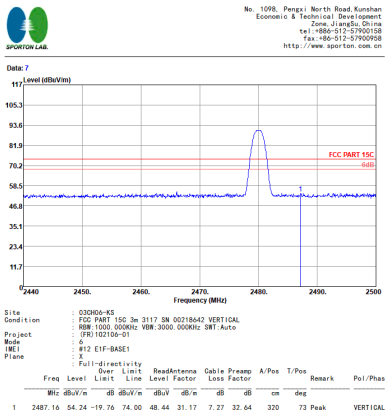
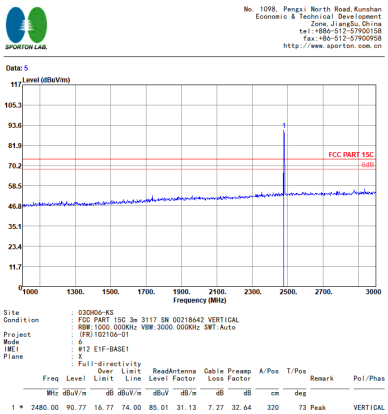
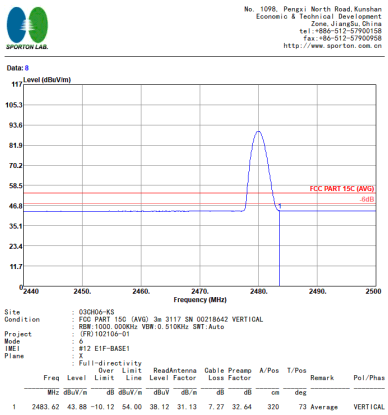
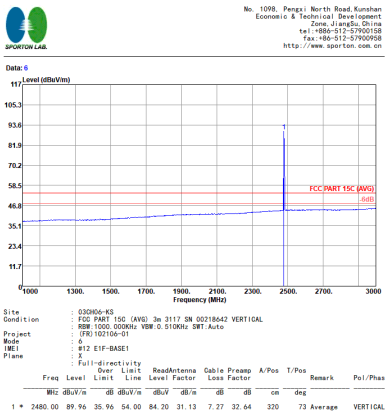
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - L	
1	Horizontal	Fundamental
Peak		
Avg.		

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - R	
1	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - L	
1	Vertical	Fundamental
Peak		
Avg.		

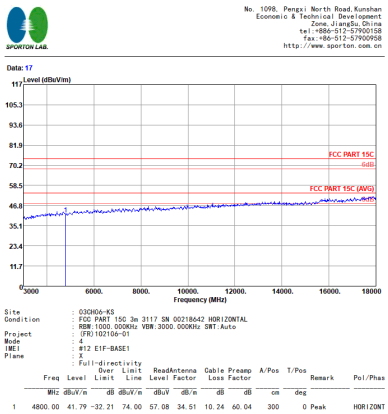
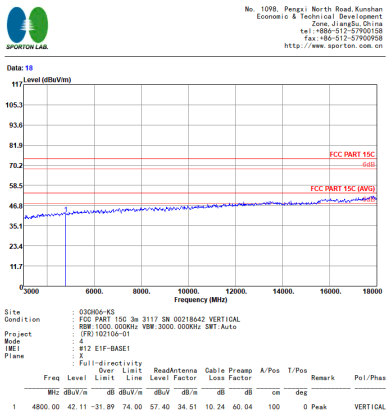
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - R	
1	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

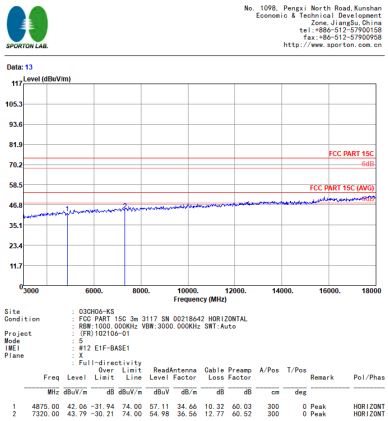
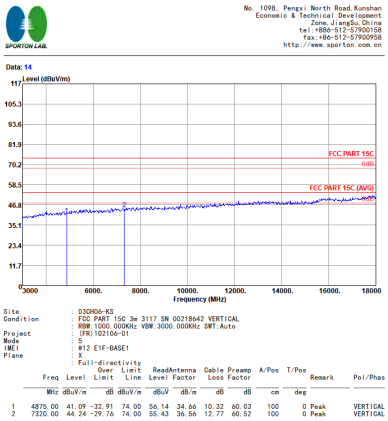
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
1	Horizontal	Fundamental
Peak		
Avg.		

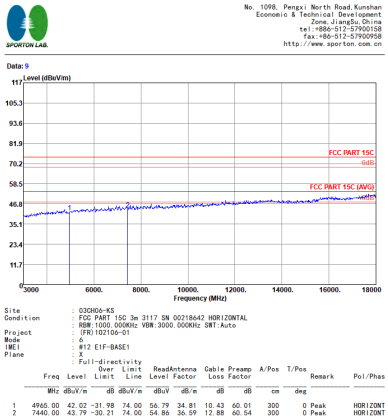
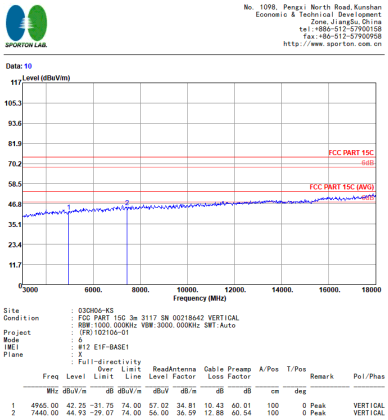
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
1	Vertical	Fundamental
Peak		
Avg.		

2.4GHz 2400~2483.5MHz

BLE（ANT 1）-1Mbps (Harmonic @ 3m)

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH00 2402MHz	
1	Horizontal	Vertical
Peak Avg.		

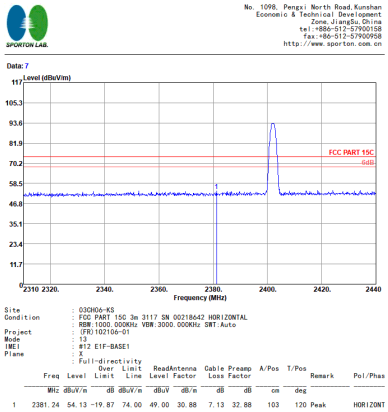
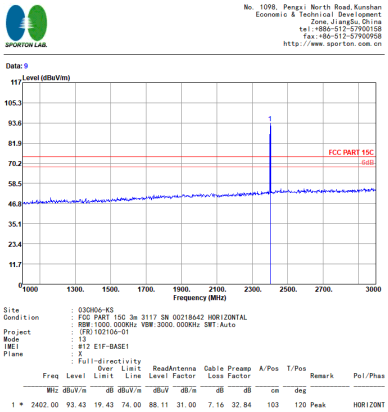
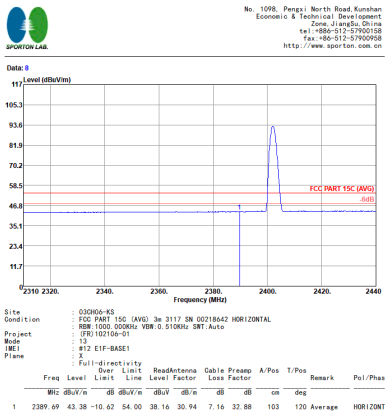
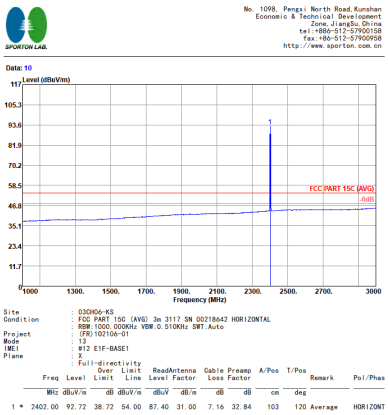
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH19 2440MHz	
1	Horizontal	Vertical
Peak Avg.		

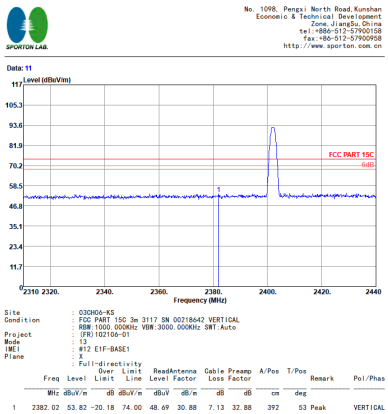
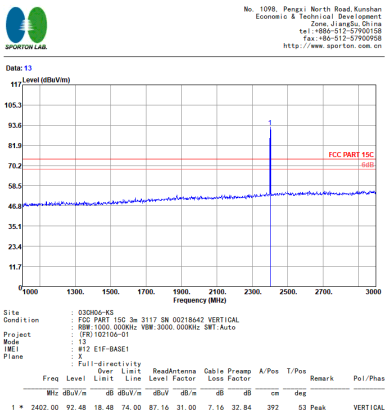
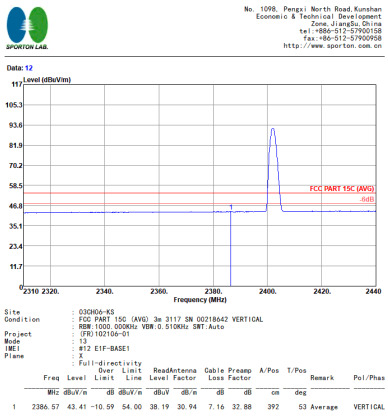
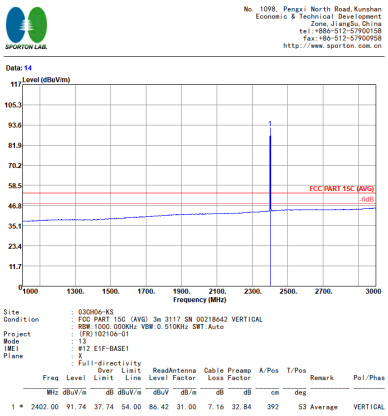
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH39 2480MHz	
1	Horizontal	Vertical
Peak		

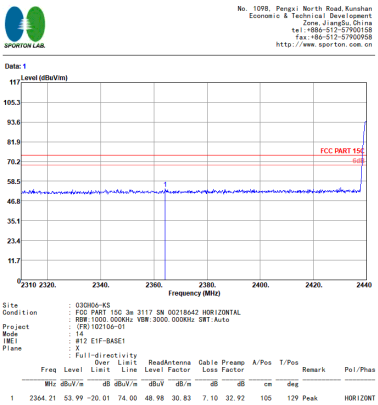
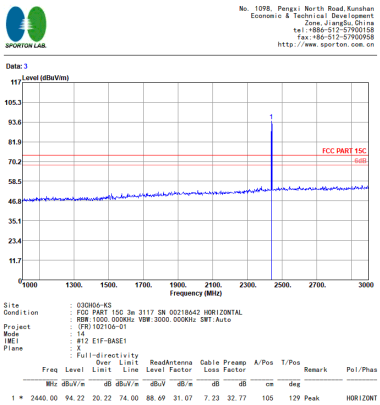
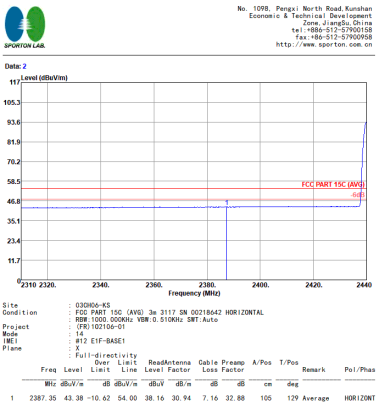
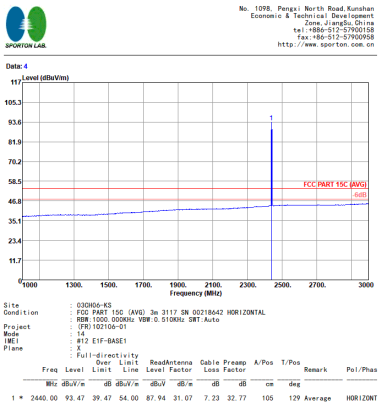
Note: Pre-scanned for 18GHz to 26GHz, there are no signals, thus only test data below 18GHz are shown in the report.

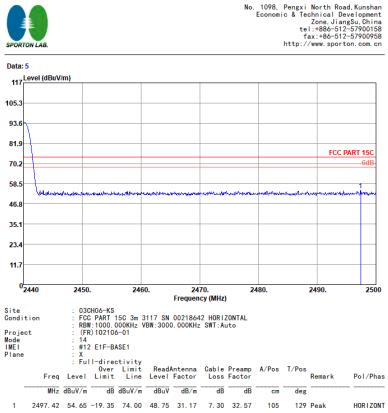
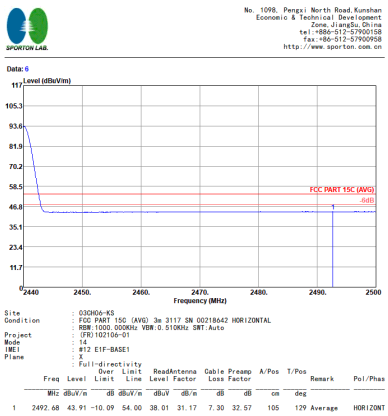
2.4GHz 2400~2483.5MHz

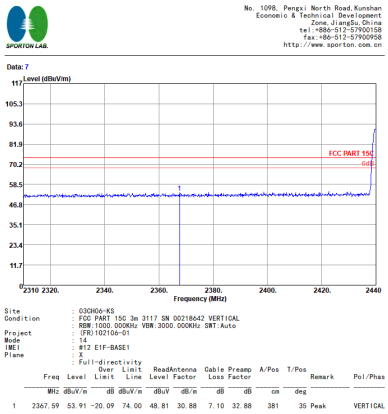
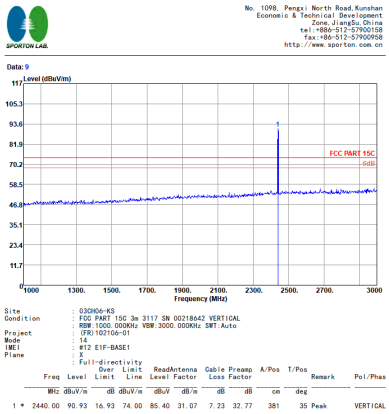
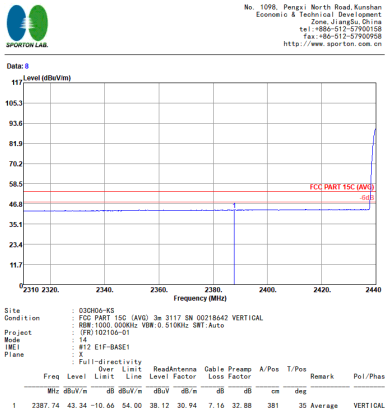
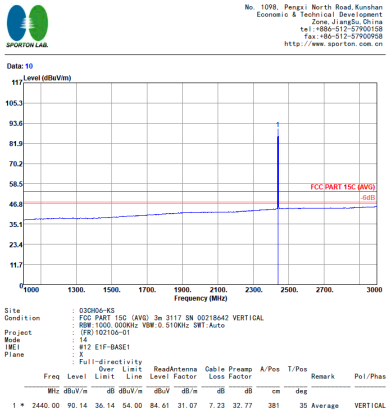
BLE（ANT 2）-1Mbps (Band Edge @ 3m)

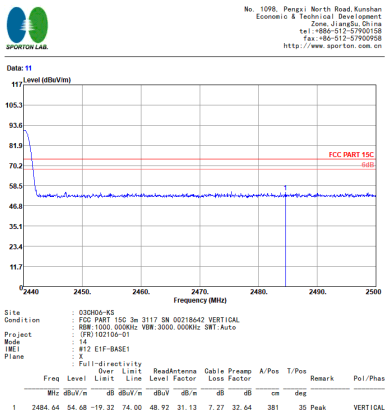
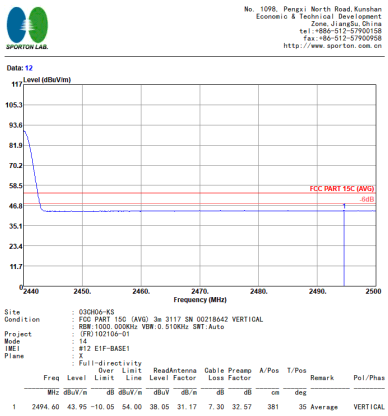
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
2	Horizontal	Fundamental
Peak		
Avg.		

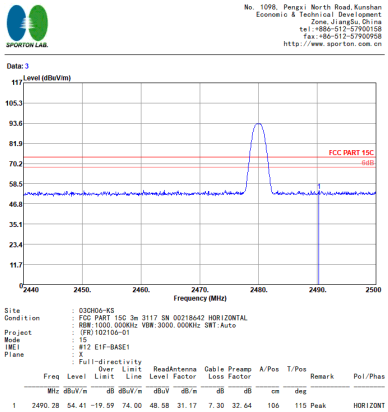
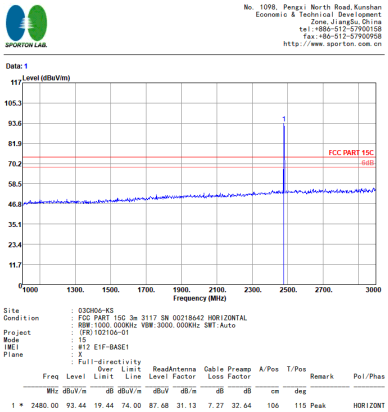
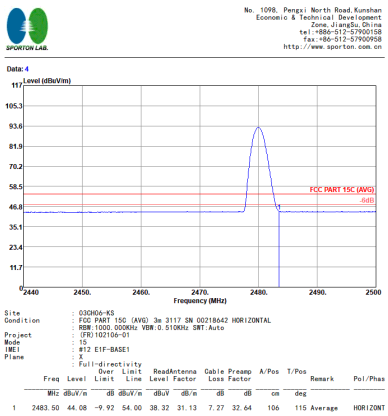
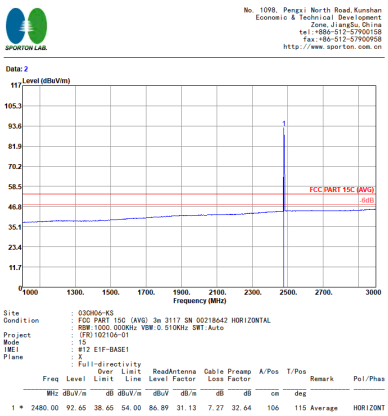
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
2	Vertical	Fundamental
Peak		
Avg		

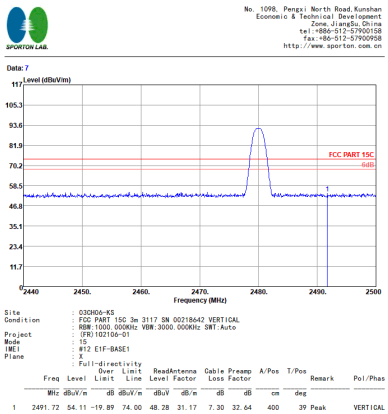
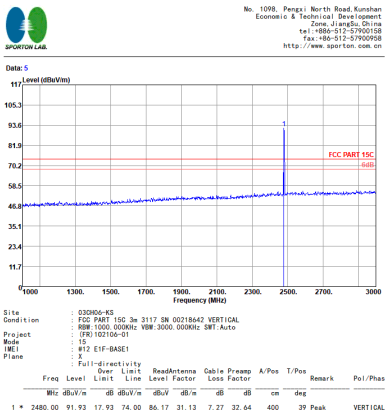
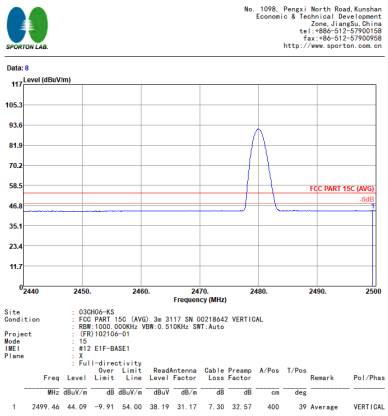
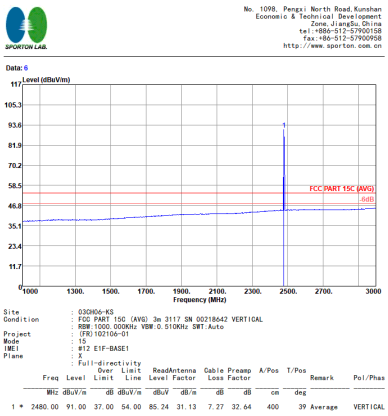
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - L	
2	Horizontal	Fundamental
Peak		
Avg.		

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - R	
2	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - L	
2	Vertical	Fundamental
Peak		
Avg.		

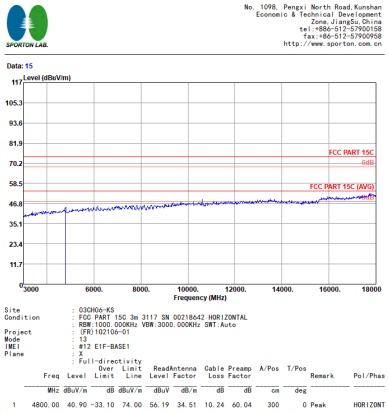
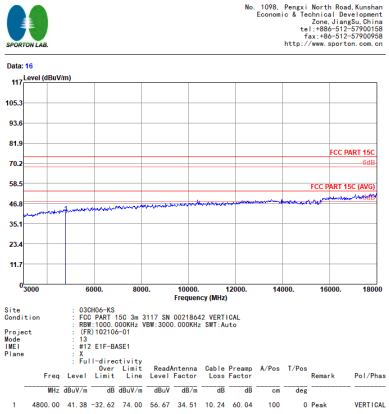
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - R	
2	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

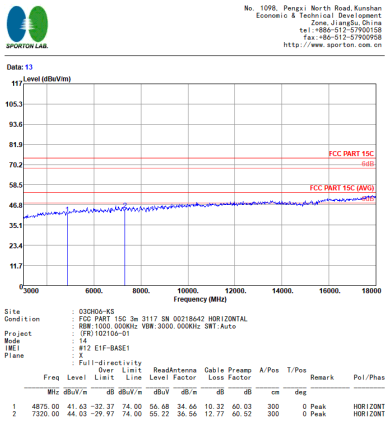
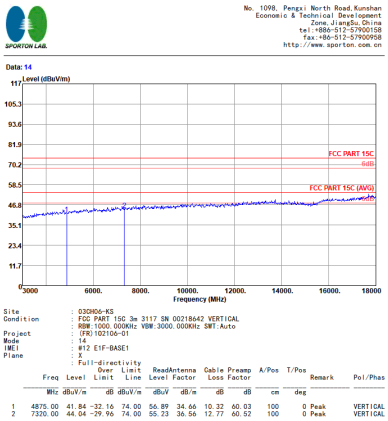
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
2	Horizontal	Fundamental
Peak		
Avg.		

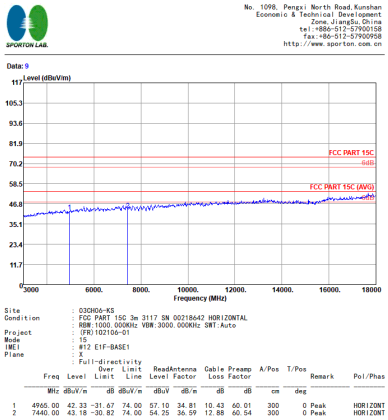
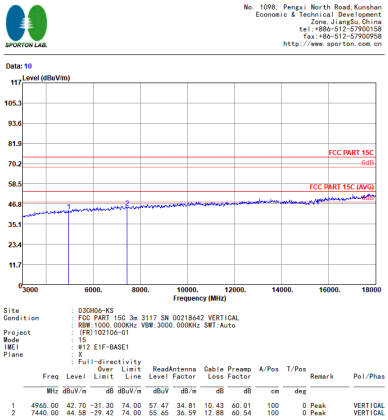
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
2	Vertical	Fundamental
Peak		
Avg.		

2.4GHz 2400~2483.5MHz

BLE（ANT 2）-1Mbps (Harmonic @ 3m)

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH00 2402MHz	
2	Horizontal	Vertical
Peak Avg.		

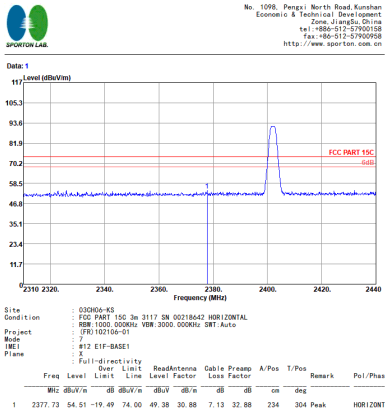
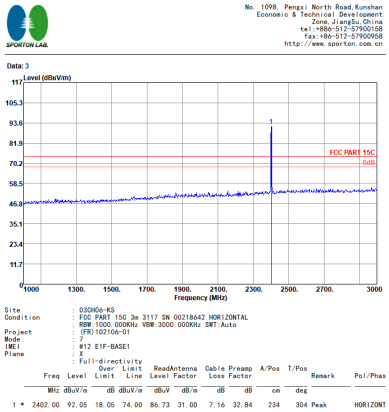
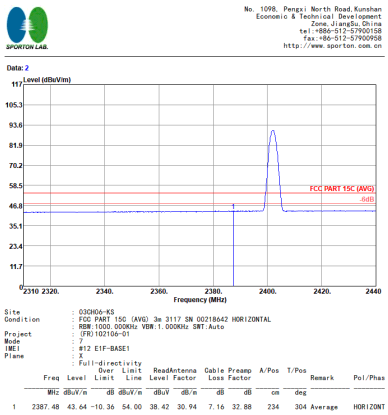
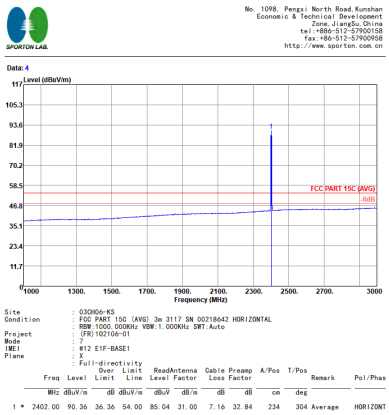
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH19 2440MHz	
2	Horizontal	Vertical
Peak Avg.		

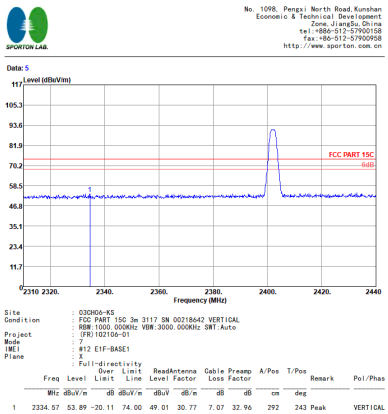
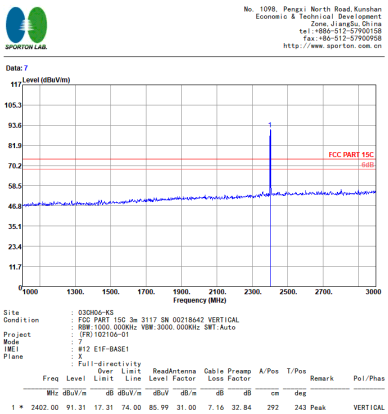
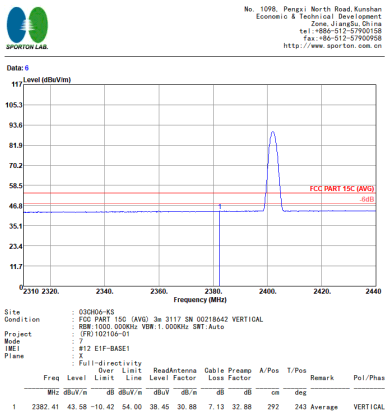
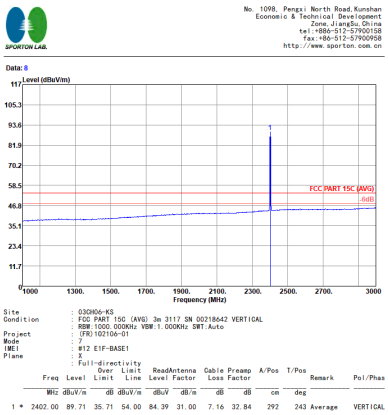
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH39 2480MHz	
2	Horizontal	Vertical
Peak		

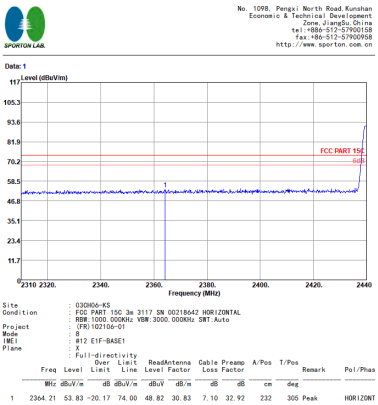
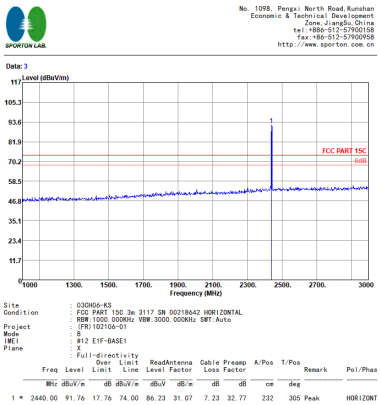
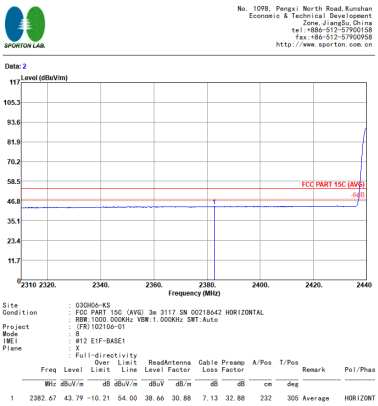
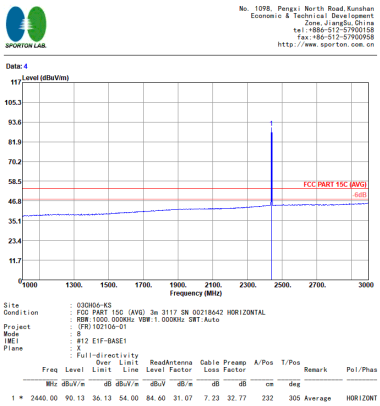
Note: Pre-scanned for 18GHz to 26GHz, there are no signals, thus only test data below 18GHz are shown in the report.

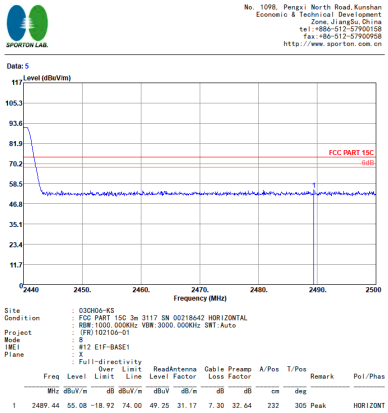
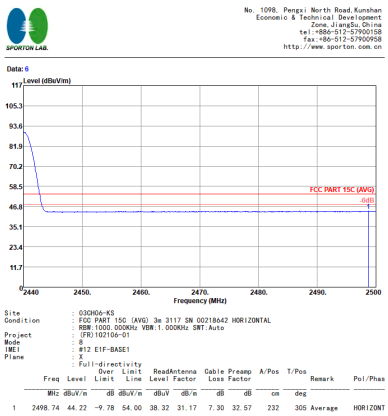
2.4GHz 2400~2483.5MHz

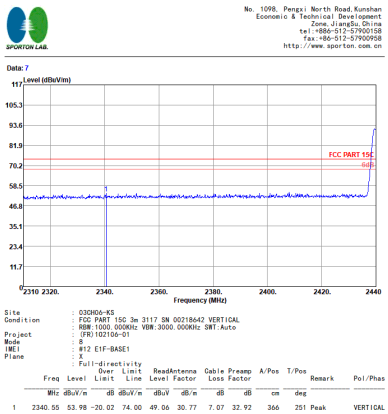
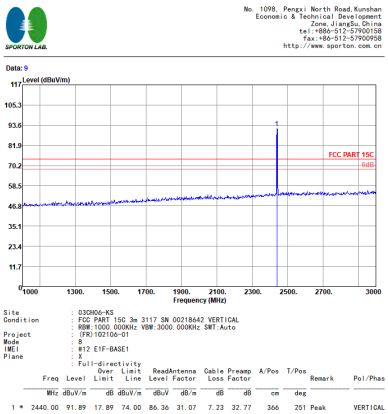
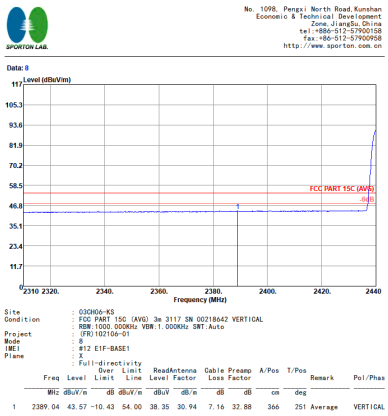
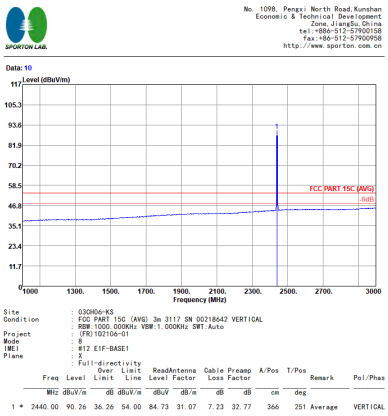
BLE（ANT 1）-2Mbps (Band Edge @ 3m)

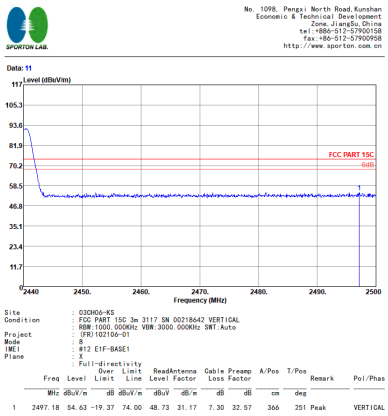
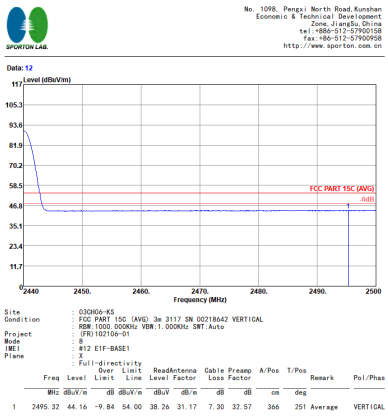
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
1	Horizontal	Fundamental
Peak		
Avg.		

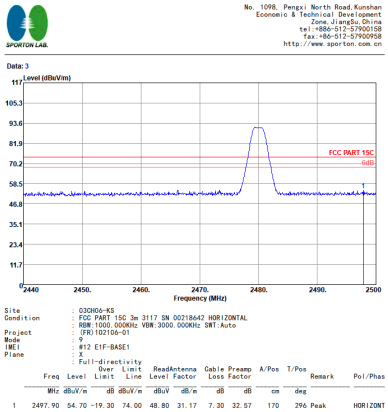
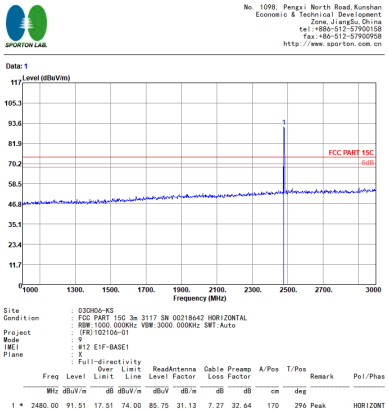
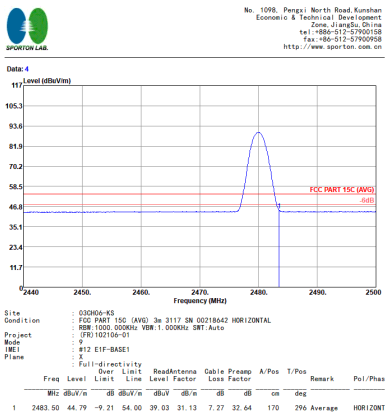
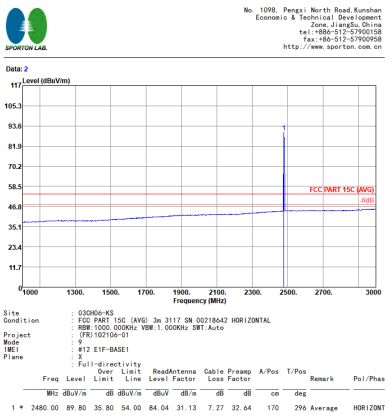
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
1	Vertical	Fundamental
Peak		
Avg		

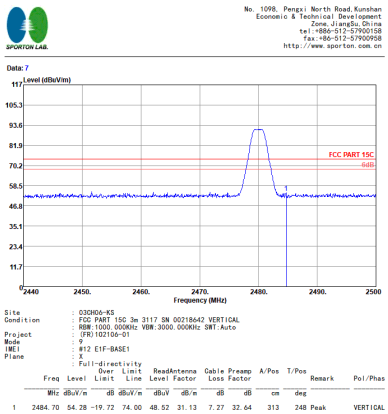
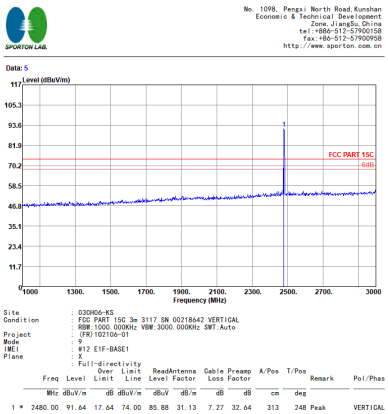
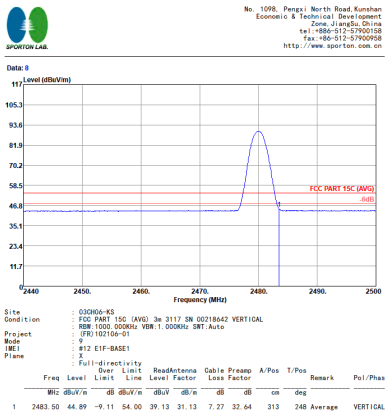
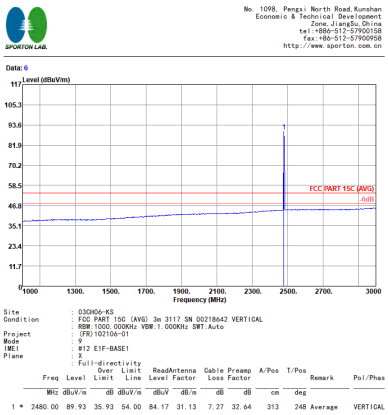
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - L	
1	Horizontal	Fundamental
Peak		
Avg.		

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - R	
1	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - L	
1	Vertical	Fundamental
Peak		
Avg.		

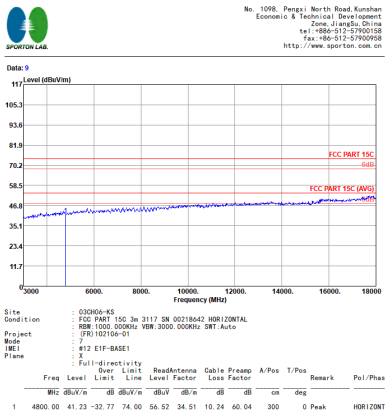
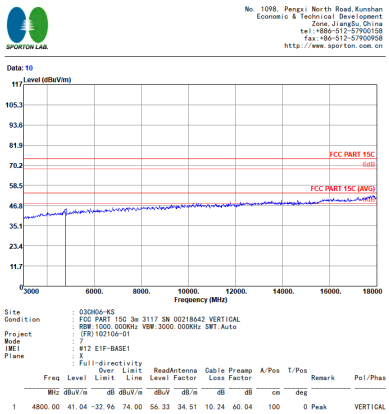
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - R	
1	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

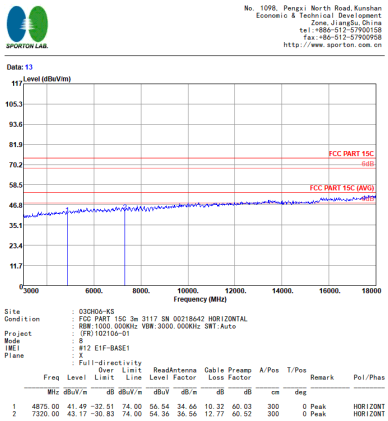
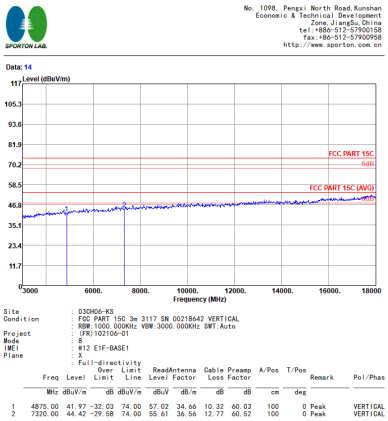
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
1	Horizontal	Fundamental
Peak		
Avg.		

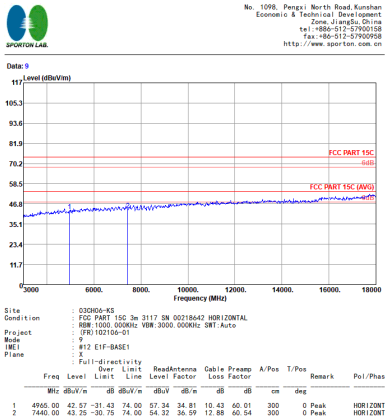
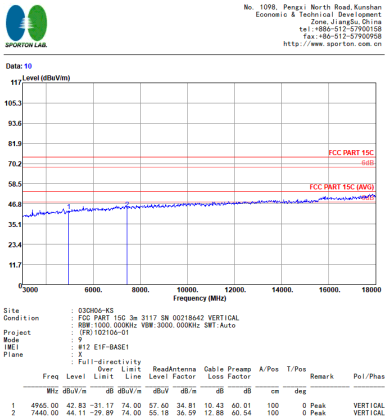
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
1	Vertical	Fundamental
Peak		
Avg.		

2.4GHz 2400~2483.5MHz

BLE（ANT 1）-2Mbps(Harmonic @ 3m)

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH00 2402MHz	
1	Horizontal	Vertical
Peak Avg.		

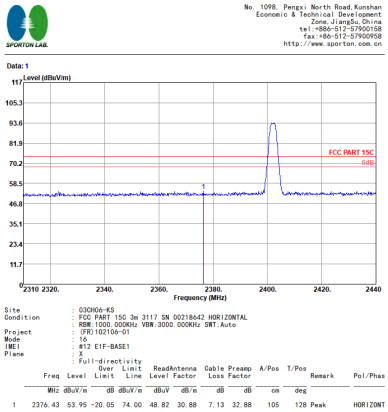
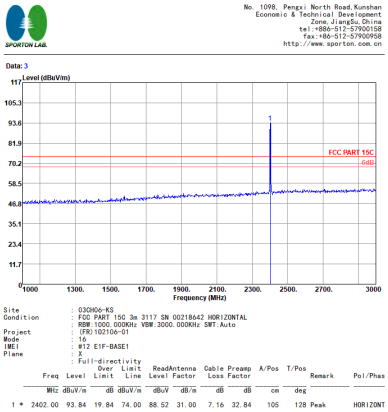
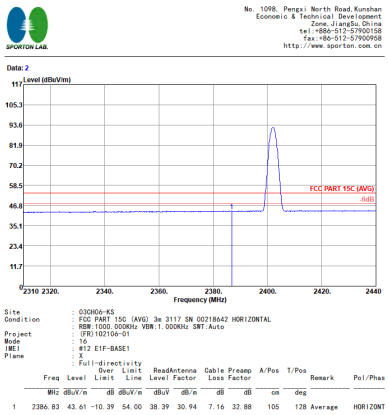
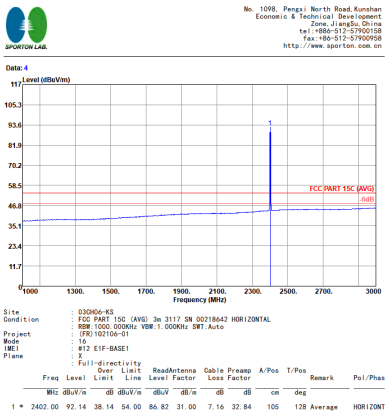
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH19 2440MHz	
1	Horizontal	Vertical
Peak Avg.	 No. 1098, Pengxi North Road,Kunshan Economic & Technical Development Zone,JiangSu,China tel:+86-512-57900158 fax:+86-512-57900958 http://www.sporton.com.cn Data: 13 Level (dBuV/m) 117 105.3 93.6 81.9 70.2 58.5 46.8 35.1 23.4 11.7 0 FCC PART 15C -6dB FCC PART 15C (AVG) -6dB 3000 6000. 8000. 10000. 12000. 14000. 16000. 18000 Frequency (MHz) Site : O3CH06-KS Condition : FCC PART 15C 3m 3117 SN 00218642 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : (FR)102106-01 Mode : B IMEI : #12 E1F-BASE1 Plane : X : Full-directivity Freq Level Over Limit Limit Line ReadAntenna Level Factor Cable Loss Factor Preamp Factor A/Pos T/Pos Remark Pol/Phas MHz dBuV/m dB dBuV/m dBuV dBuV dB/m dB dB cm deg 1 4875.00 41.49 -32.51 74.00 56.54 34.66 10.32 60.03 300 0 Peak HORIZONT 2 7320.00 43.17 -30.83 74.00 54.36 36.56 12.77 60.52 300 0 Peak HORIZONT	 No. 1098, Pengxi North Road,Kunshan Economic & Technical Development Zone,JiangSu,China tel:+86-512-57900158 fax:+86-512-57900958 http://www.sporton.com.cn Data: 14 Level (dBuV/m) 117 105.3 93.6 81.9 70.2 58.5 46.8 35.1 23.4 11.7 0 FCC PART 15C -6dB FCC PART 15C (AVG) -6dB 3000 6000. 8000. 10000. 12000. 14000. 16000. 18000 Frequency (MHz) Site : O3CH06-KS Condition : FCC PART 15C 3m 3117 SN 00218642 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : (FR)102106-01 Mode : B IMEI : #12 E1F-BASE1 Plane : Z : Full-directivity Freq Level Over Limit Limit Line ReadAntenna Level Factor Cable Loss Factor Preamp Factor A/Pos T/Pos Remark Pol/Phas MHz dBuV/m dB dBuV/m dBuV dBuV dB/m dB dB cm deg 1 4875.00 41.97 -32.03 74.00 57.02 34.66 10.32 60.03 100 0 Peak VERTICAL 2 7320.00 44.42 -29.58 74.00 55.61 36.56 12.77 60.52 100 0 Peak VERTICAL

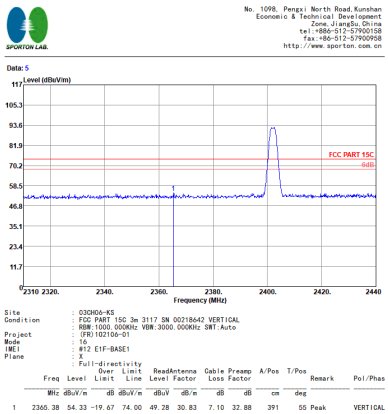
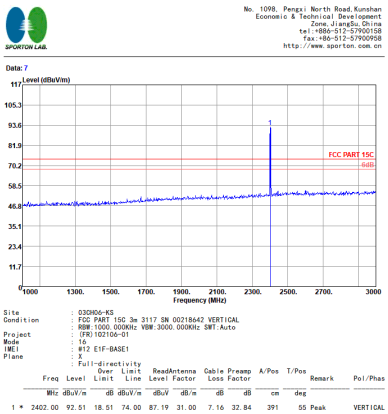
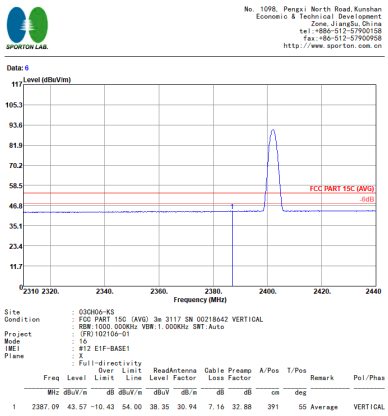
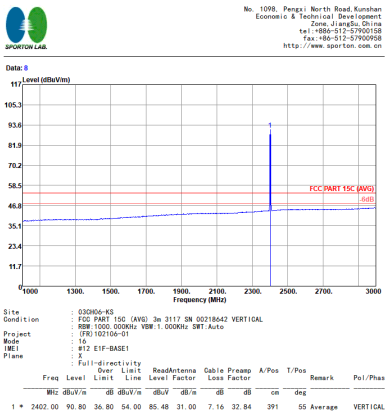
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH39 2480MHz	
1	Horizontal	Vertical
Peak		

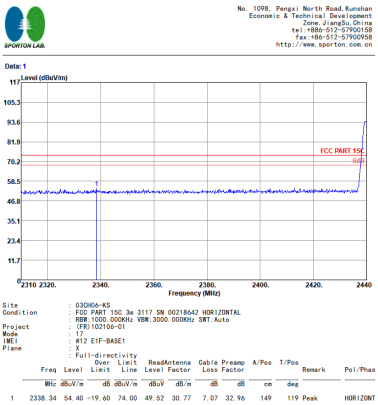
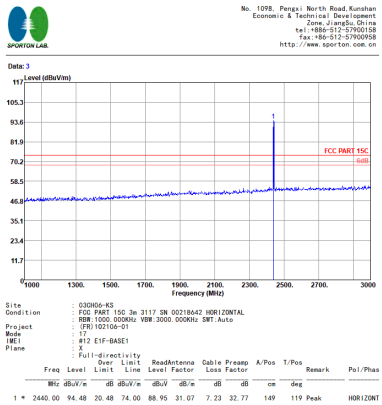
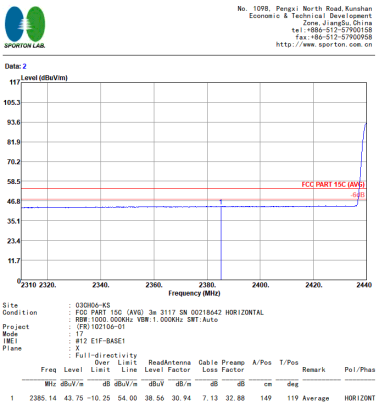
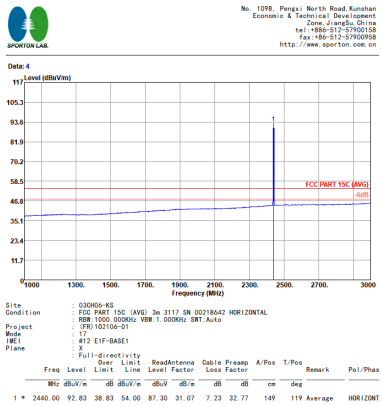
Note: Pre-scanned for 18GHz to 26GHz, there are no signals, thus only test data below 18GHz are shown in the report.

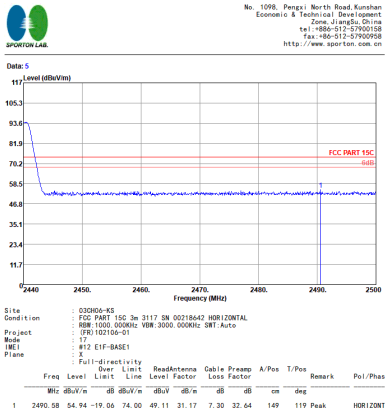
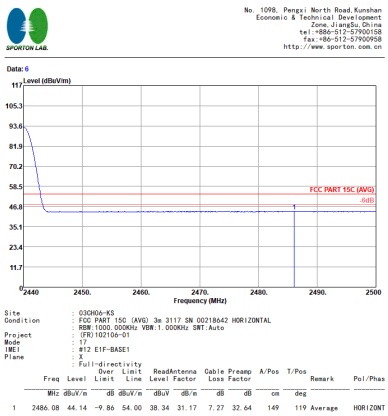
2.4GHz 2400~2483.5MHz

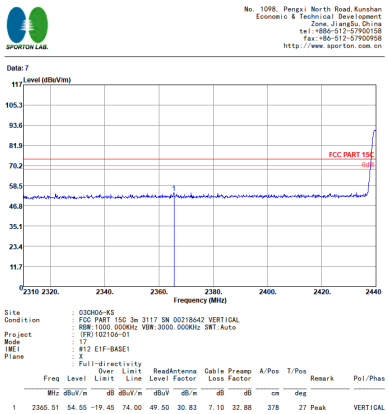
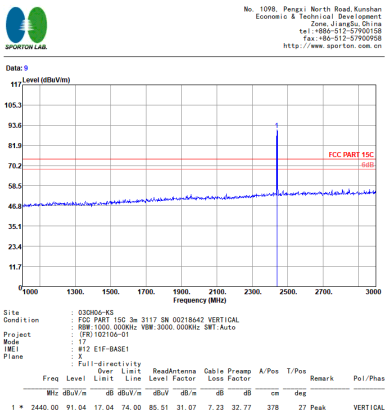
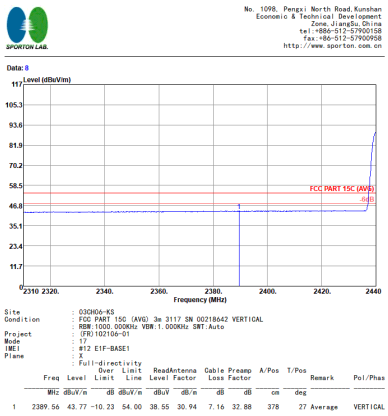
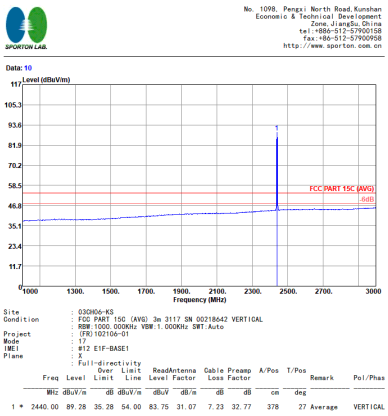
BLE（ANT 2）-2Mbps (Band Edge @ 3m)

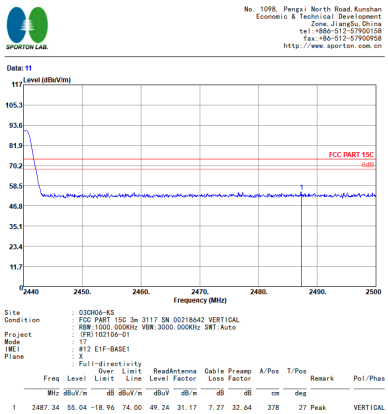
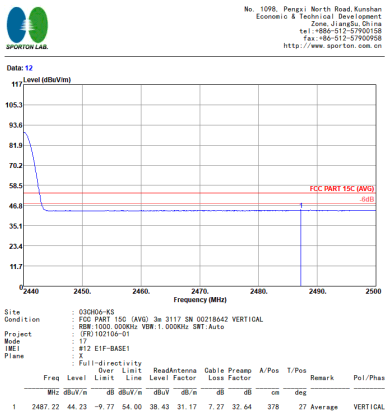
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
2	Horizontal	Fundamental
Peak		
Avg.		

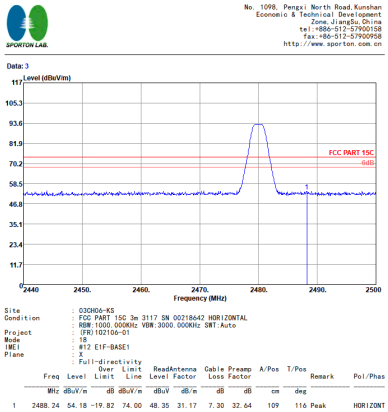
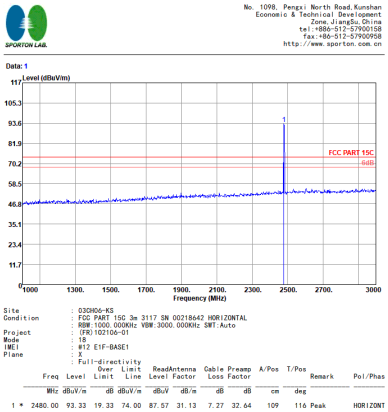
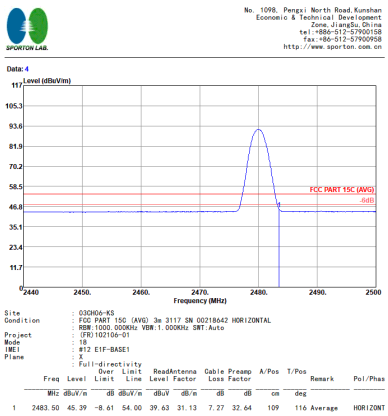
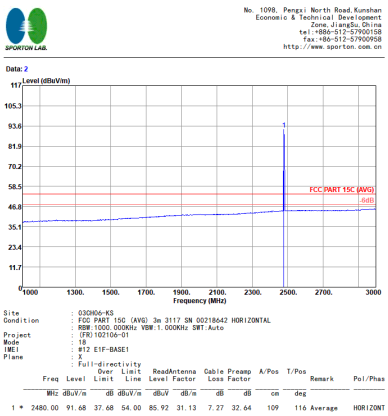
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH00 2402MHz	
2	Vertical	Fundamental
Peak		
Avg		

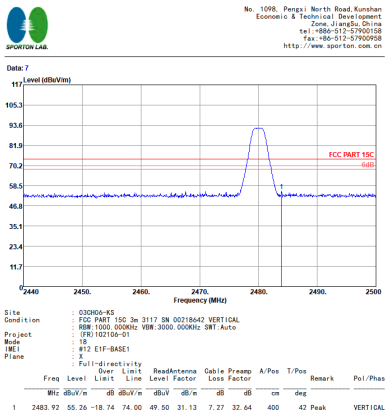
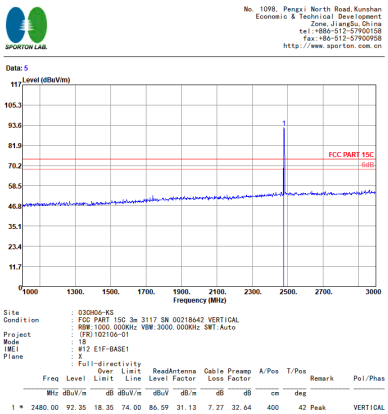
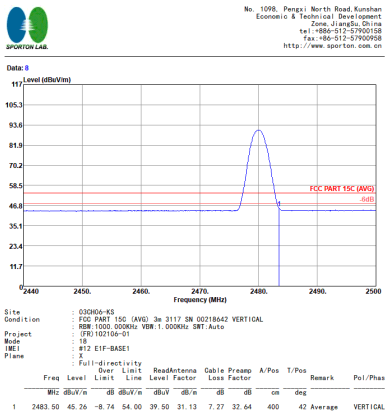
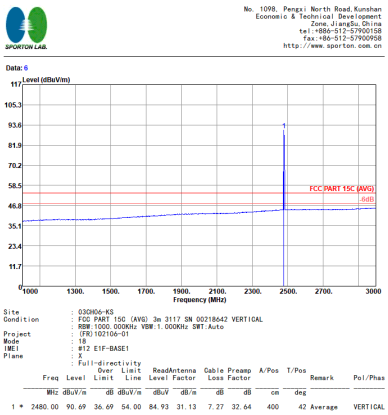
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - L	
2	Horizontal	Fundamental
Peak		
Avg.		

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - R	
2	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - L	
2	Vertical	Fundamental
Peak		
Avg.		

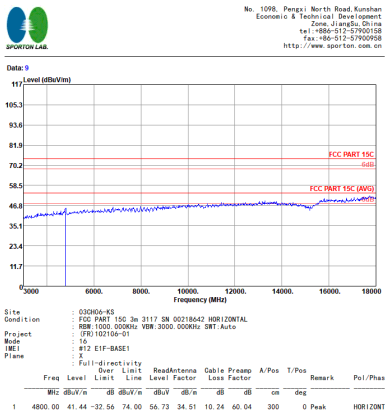
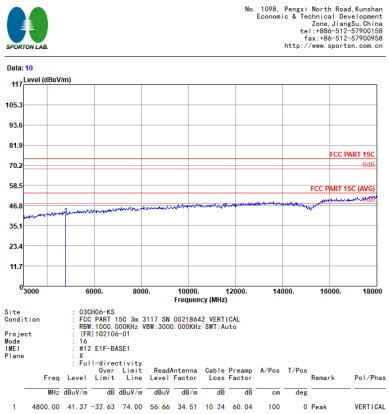
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH19 2440MHz - R	
2	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

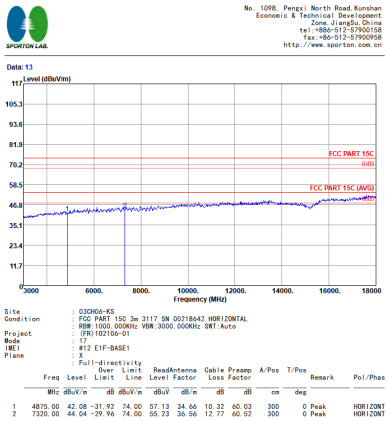
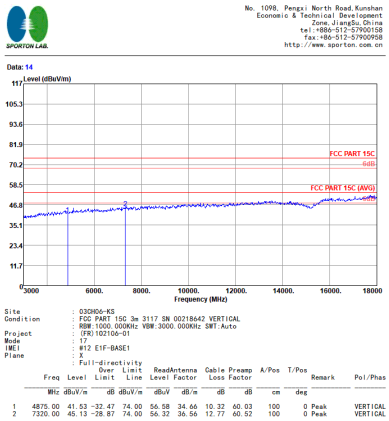
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
2	Horizontal	Fundamental
Peak		
Avg.		

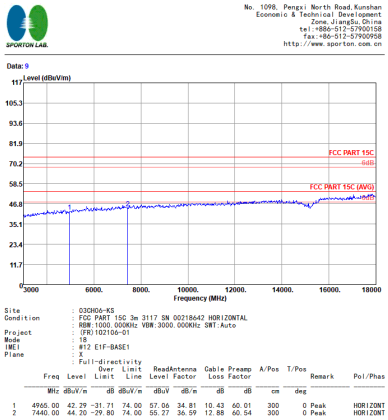
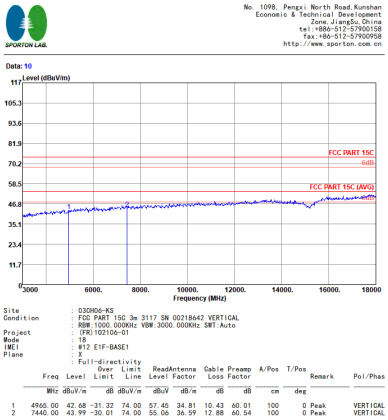
BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	BLE CH39 2480MHz	
2	Vertical	Fundamental
Peak		
Avg.		

2.4GHz 2400~2483.5MHz

BLE（ANT 2）-2Mbps (Harmonic @ 3m)

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH00 2402MHz	
2	Horizontal	Vertical
Peak Avg.		

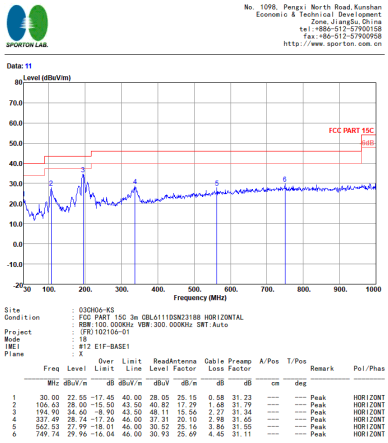
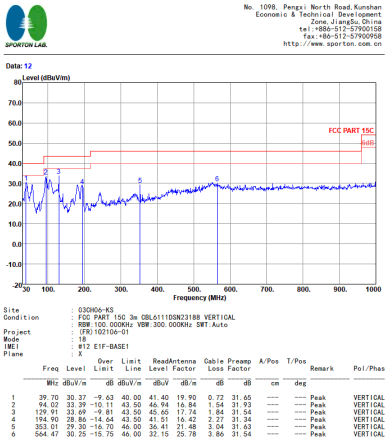
BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH19 2440MHz	
2	Horizontal	Vertical
Peak Avg.	 Site : O3CH06-KS Condition : FCC PART 15C 3m 3117 SN 00218642 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : (FR)102106-01 Mode : 17 IMEI : #12 E1F-BASE1 Plane : X : Full-directivity Freq Level Over Limit Limit Line ReadAntenna Level Factor Cable Loss Factor Preamp Factor A/Pos T/Pos Remark Pol/Phas MHz dBuV/m dB dBuV/m dBuV dB/m dB dB cm deg 1 4875.00 42.08 -31.92 74.00 57.13 34.66 10.32 60.03 300 0 Peak HORIZONT 2 7320.00 44.04 -29.96 74.00 55.23 36.56 12.77 60.52 300 0 Peak HORIZONT	 Site : O3CH06-KS Condition : FCC PART 15C 3m 3117 SN 00218642 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : (FR)102106-01 Mode : 17 IMEI : #12 E1F-BASE1 Plane : Z : Full-directivity Freq Level Over Limit Limit Line ReadAntenna Level Factor Cable Loss Factor Preamp Factor A/Pos T/Pos Remark Pol/Phas MHz dBuV/m dB dBuV/m dBuV dB/m dB dB cm deg 1 4875.00 41.53 -32.47 74.00 56.58 34.66 10.32 60.03 100 0 Peak VERTICAL 2 7320.00 45.13 -28.87 74.00 56.32 36.56 12.77 60.52 100 0 Peak VERTICAL

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	BLE CH39 2480MHz	
2	Horizontal	Vertical
Peak		

Note: Pre-scanned for 18GHz to 26GHz, there are no signals, thus only test data below 18GHz are shown in the report.

Emission below 1GHz

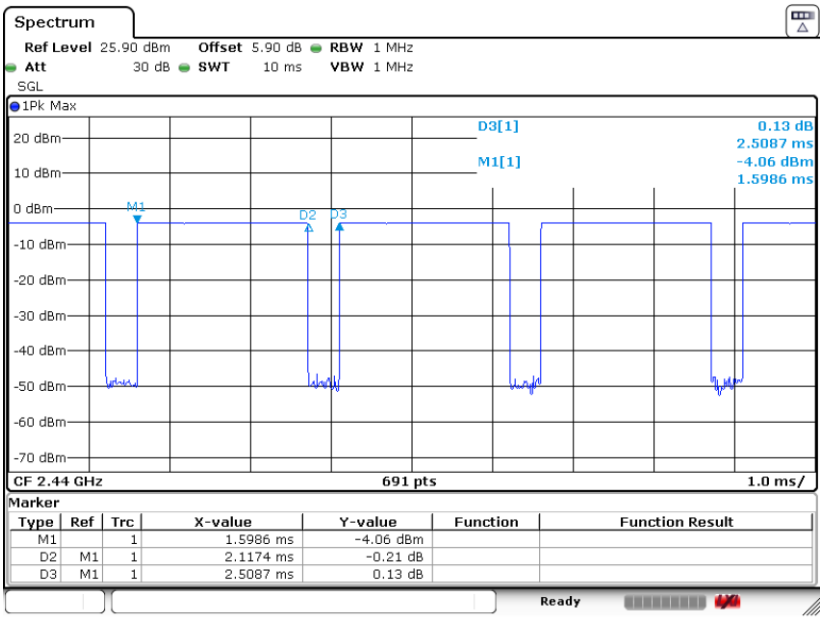
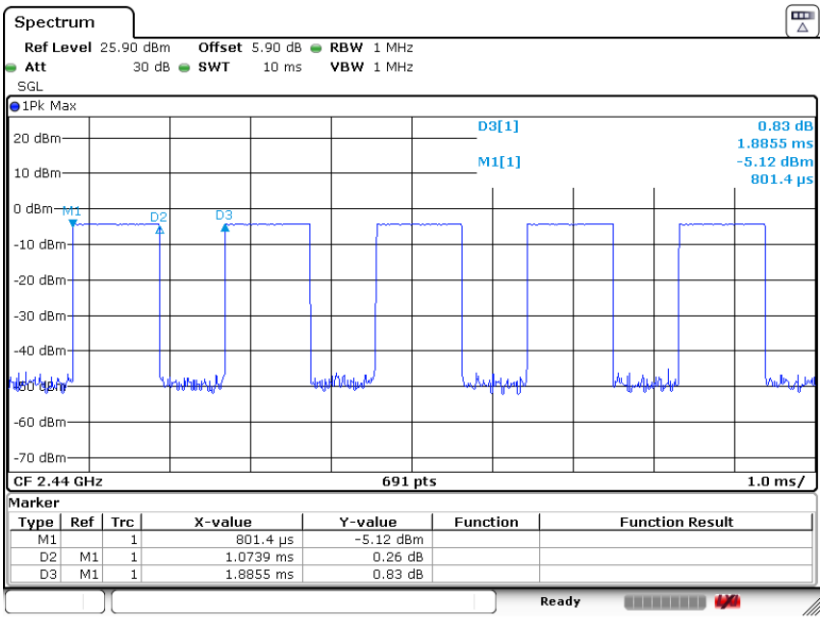
2.4GHz BLE（ANT 2）-2Mbps (LF)

BLE	2.4GHz 2400~2483.5MHz	
ANT	BLE LF	
2	Horizontal	Vertical
QP / Peak		

Appendix E. Duty Cycle Plots

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
Bluetooth LE 1Mbps	84.40	2.117	0.472	0.51KHz
Bluetooth LE 2Mbps	56.96	1.074	0.931	1KHz

Bluetooth LE 1Mbps



Bluetooth LE 2Mbps