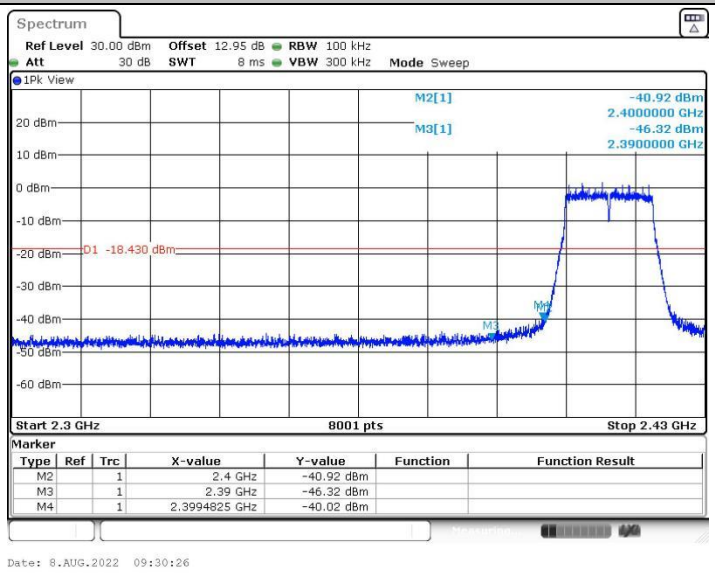
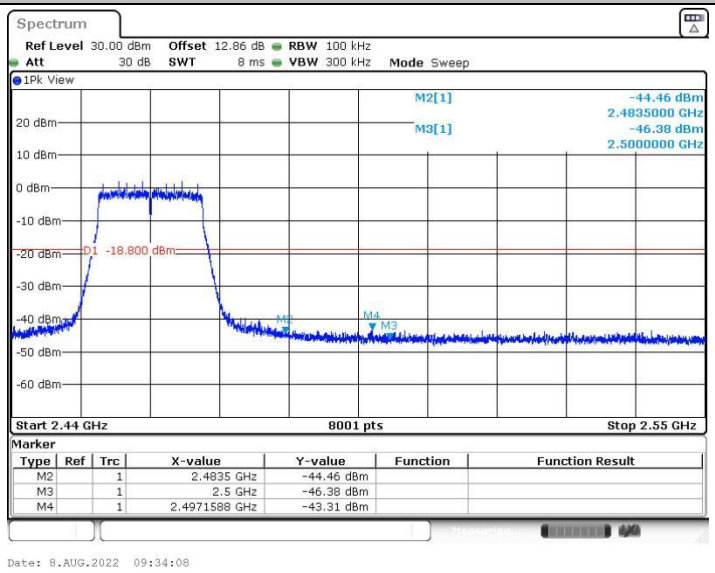
11G_Ant1_Low_2412



11G_Ant1_High_2462



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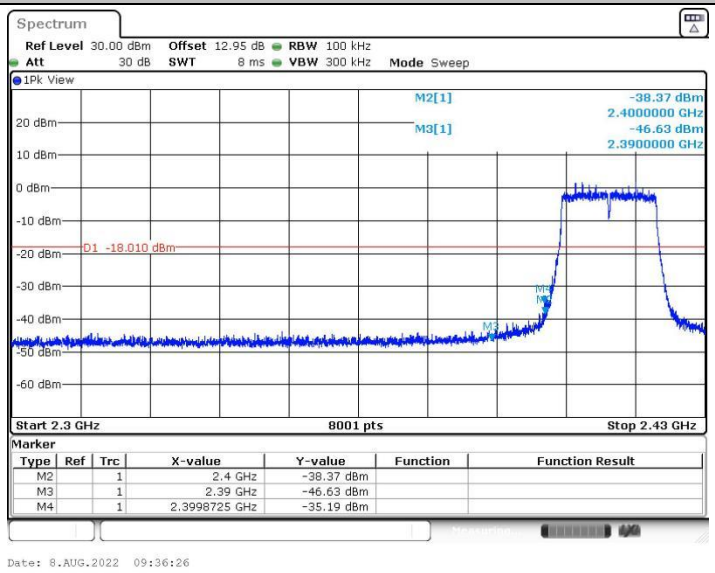

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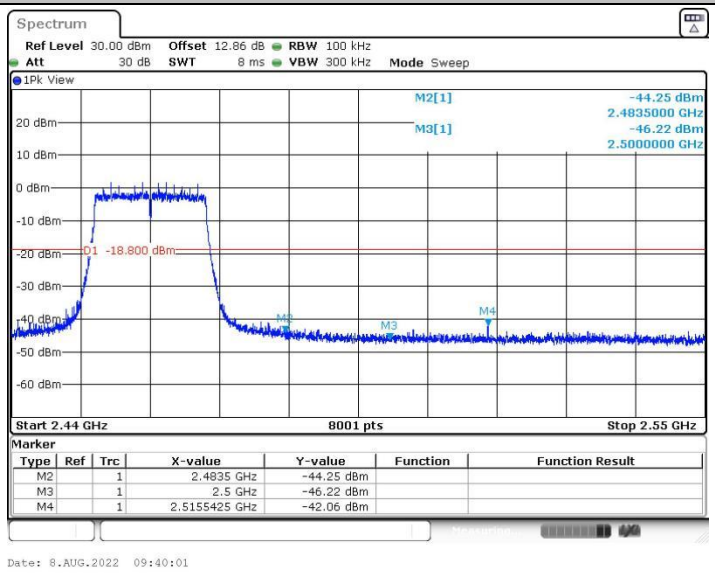

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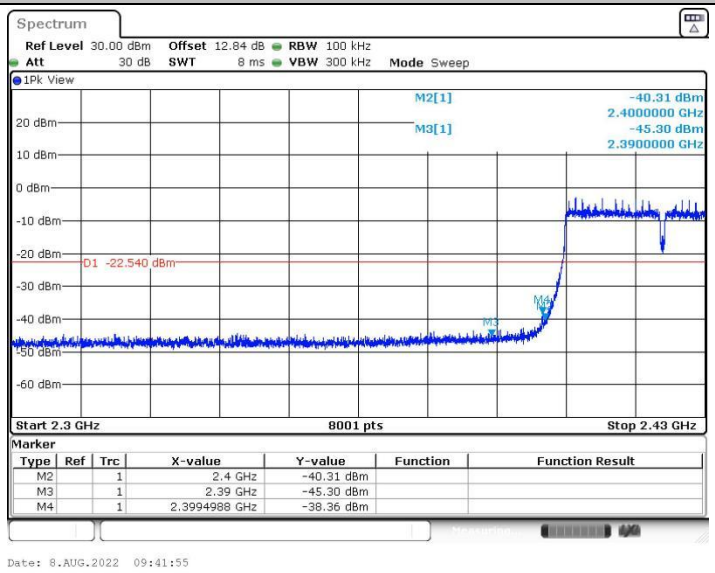

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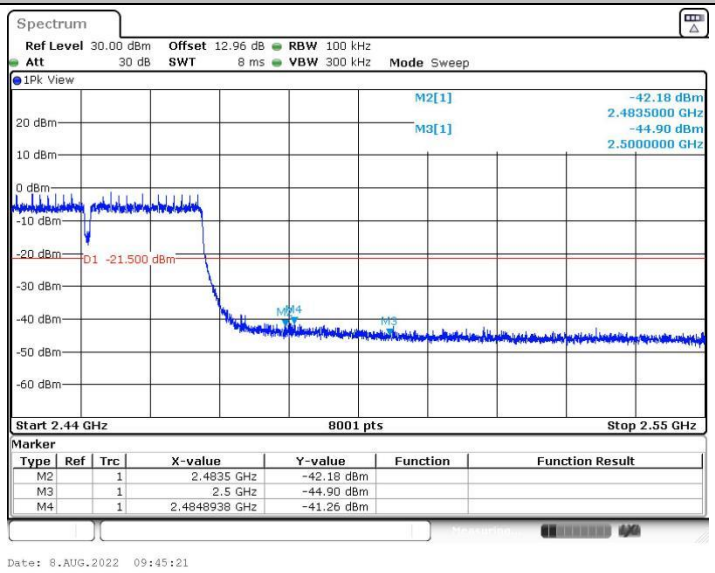


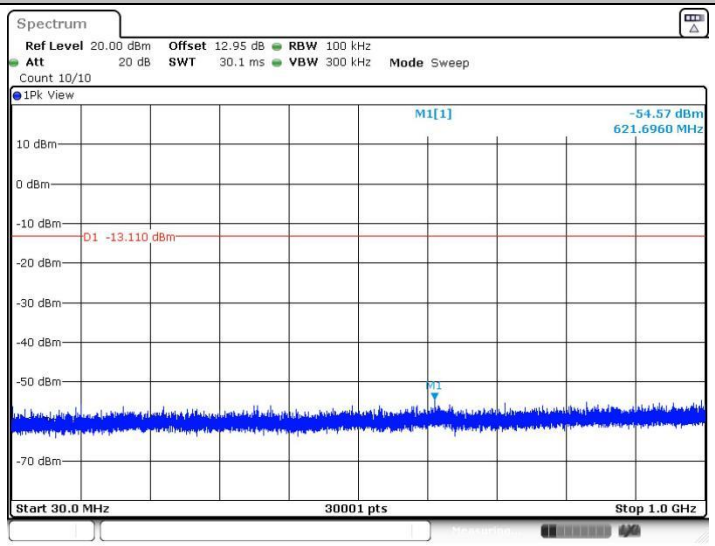
Conducted Spurious Emission

Test Result

TestMode	Antenna	Frequency[MHz]	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	30~1000	6.89	-54.57	≤-13.11	PASS
			1000~26500	6.89	-45.7	≤-13.11	PASS
		2437	30~1000	4.71	-55.06	≤-15.29	PASS
			1000~26500	4.71	-46.15	≤-15.29	PASS
		2462	30~1000	4.54	-53.99	≤-15.46	PASS
			1000~26500	4.54	-45.74	≤-15.46	PASS
11G	Ant1	2412	30~1000	1.57	-54.84	≤-18.43	PASS
			1000~26500	1.57	-46.05	≤-18.43	PASS
		2437	30~1000	4.53	-54.97	≤-15.47	PASS
			1000~26500	4.53	-46.14	≤-15.47	PASS
		2462	30~1000	1.20	-55.51	≤-18.8	PASS
			1000~26500	1.20	-45.47	≤-18.8	PASS
11N20SISO	Ant1	2412	30~1000	1.99	-54.7	≤-18.01	PASS
			1000~26500	1.99	-46.47	≤-18.01	PASS
		2437	30~1000	5.01	-55.3	≤-14.99	PASS
			1000~26500	5.01	-46.59	≤-14.99	PASS
		2462	30~1000	1.20	-54.55	≤-18.8	PASS
			1000~26500	1.20	-45.83	≤-18.8	PASS
11N40SISO	Ant1	2422	30~1000	-2.54	-51.89	≤-22.54	PASS
			1000~26500	-2.54	-46.02	≤-22.54	PASS
		2437	30~1000	-0.31	-46.86	≤-20.31	PASS
			1000~26500	-0.31	-46.4	≤-20.31	PASS
		2452	30~1000	-1.50	-47.71	≤-21.5	PASS
			1000~26500	-1.50	-45.96	≤-21.5	PASS

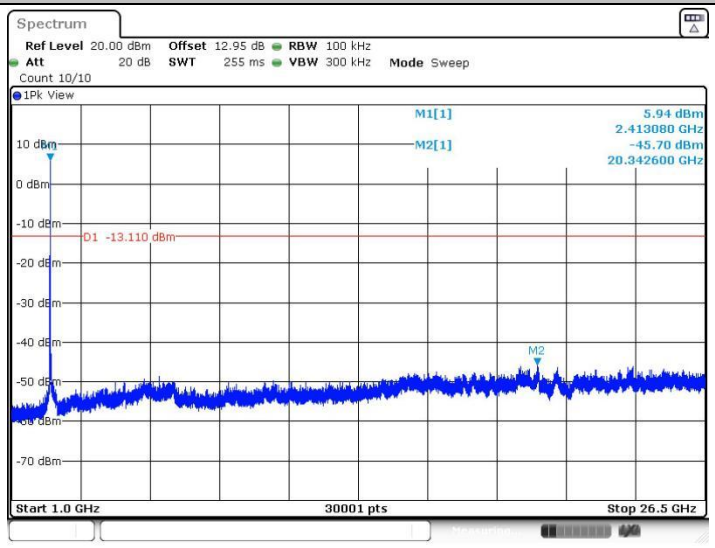
Test Graphs

11B_Ant1_2412_30~1000



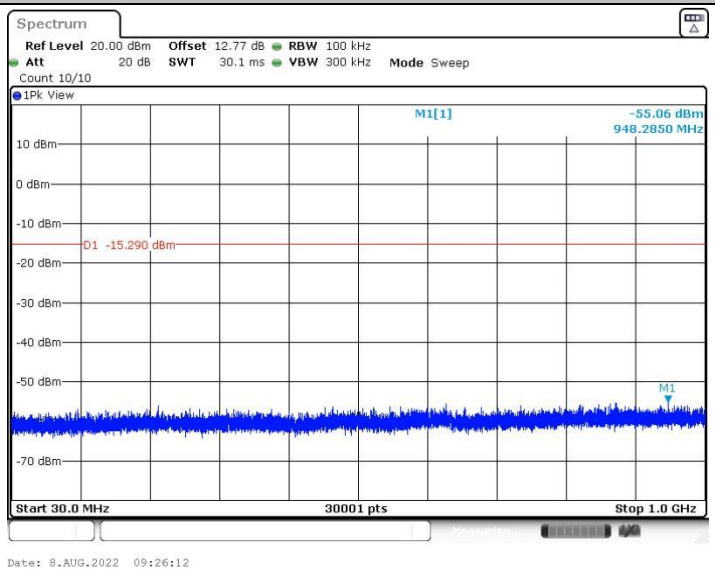
Date: 8.AUG.2022 09:22:47

11B_Ant1_2412_1000~26500

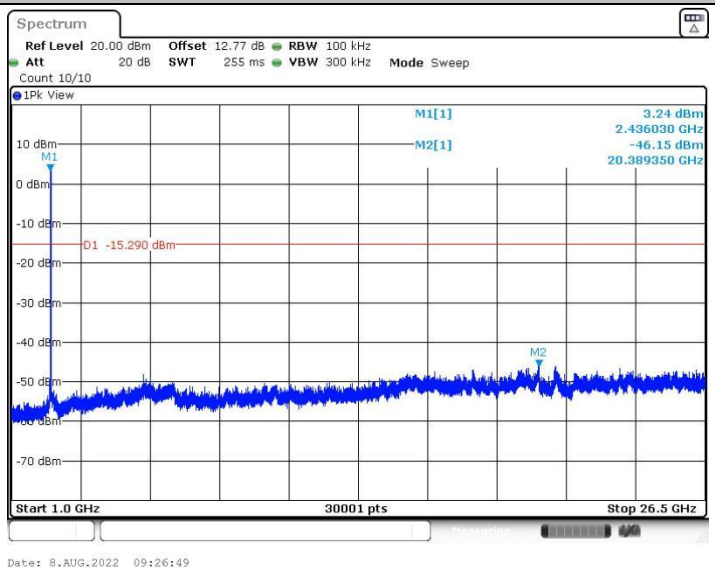


Date: 8.AUG.2022 09:23:24

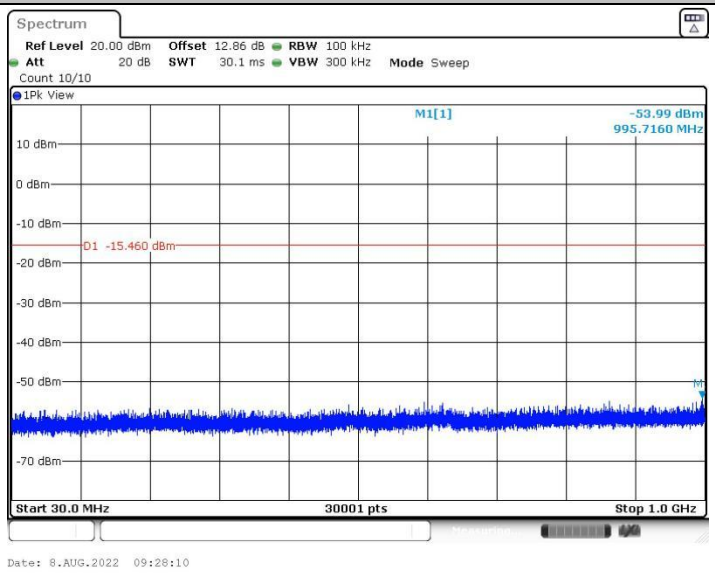
11B_Ant1_2437_30~1000



11B_Ant1_2437_1000~26500



11B_Ant1_2462_30~1000



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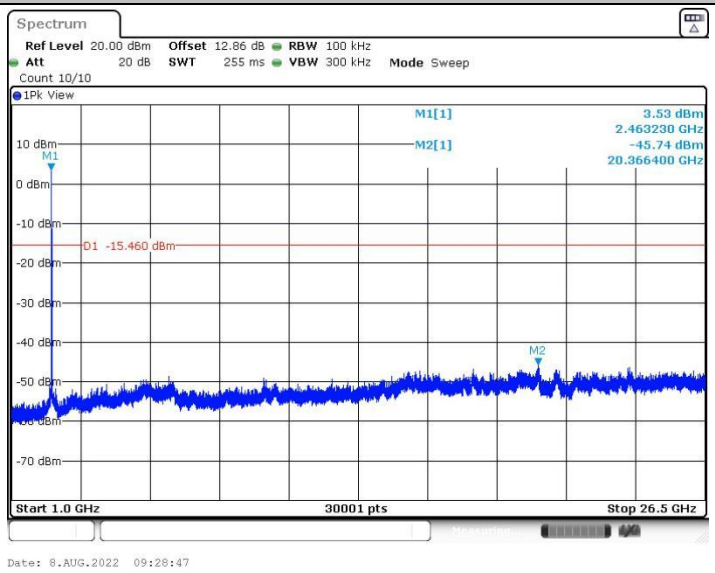

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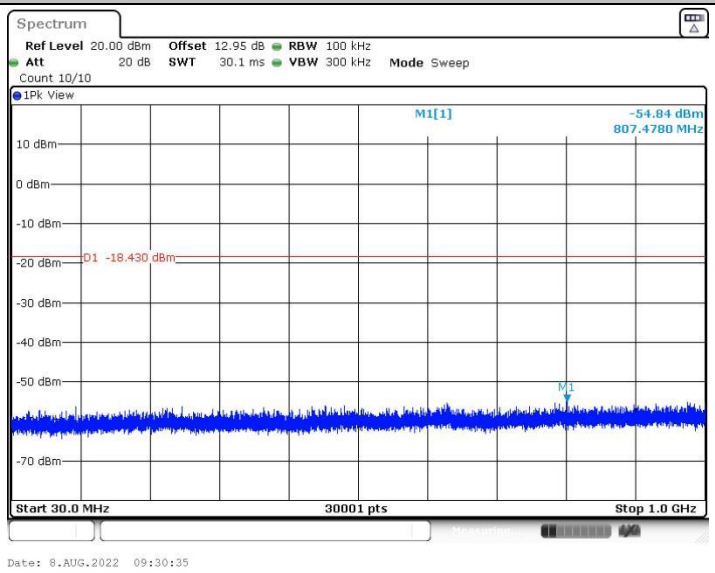
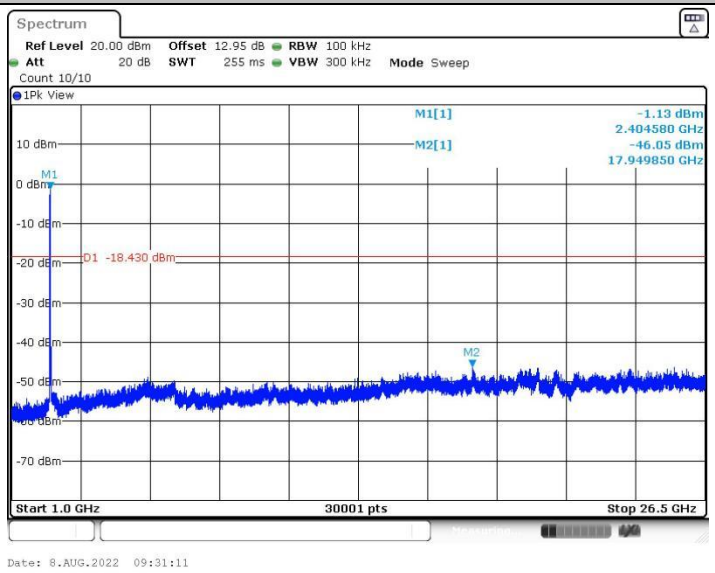


11G_Ant1_2412_1000~26500



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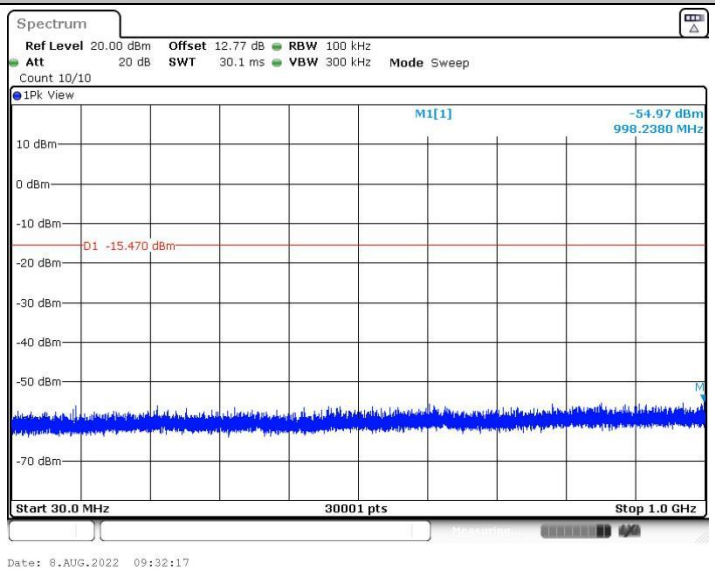
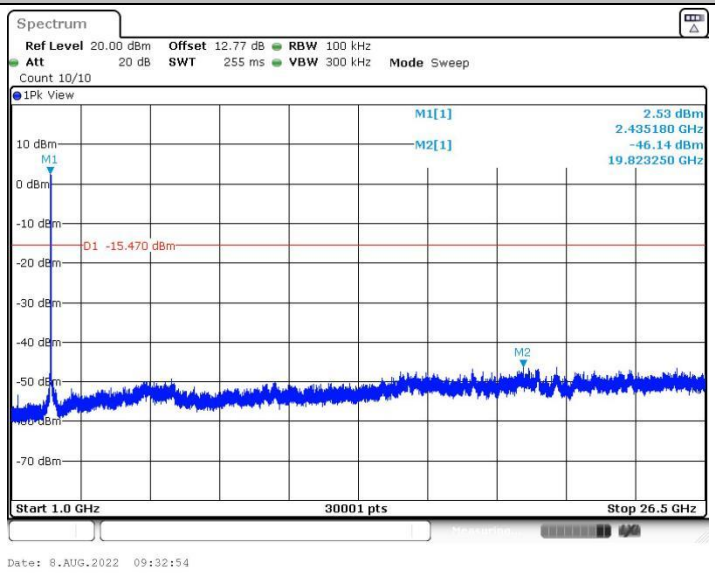


11G_Ant1_2437_1000~26500



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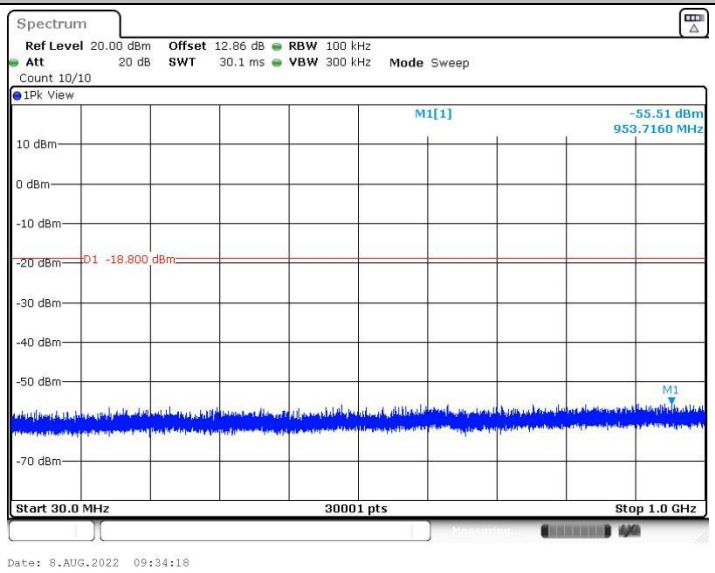
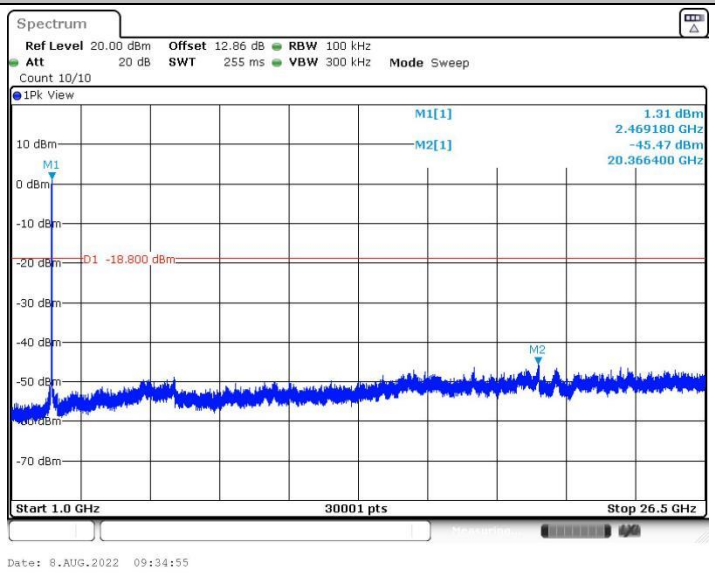
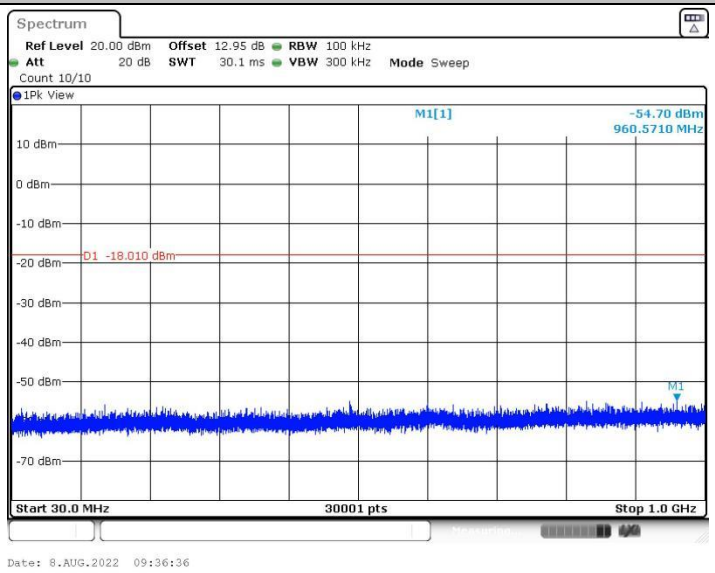


11G_Ant1_2462_1000~26500



11N20SISO_Ant1_2412_30~1000



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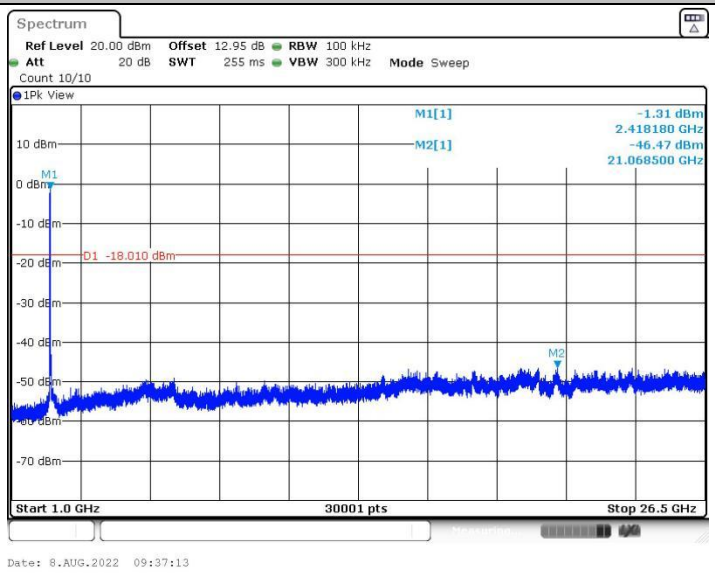

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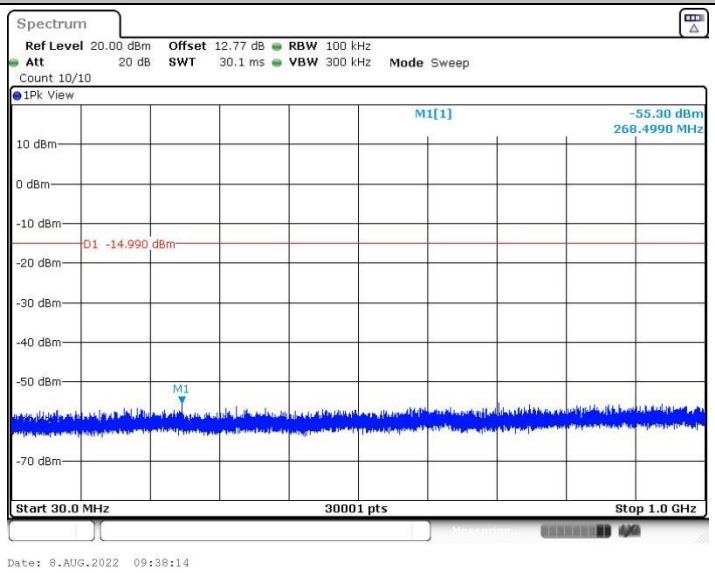

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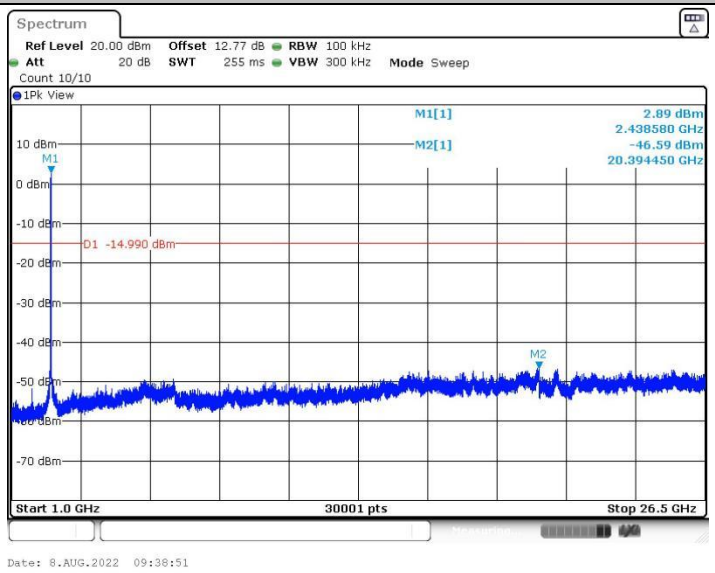

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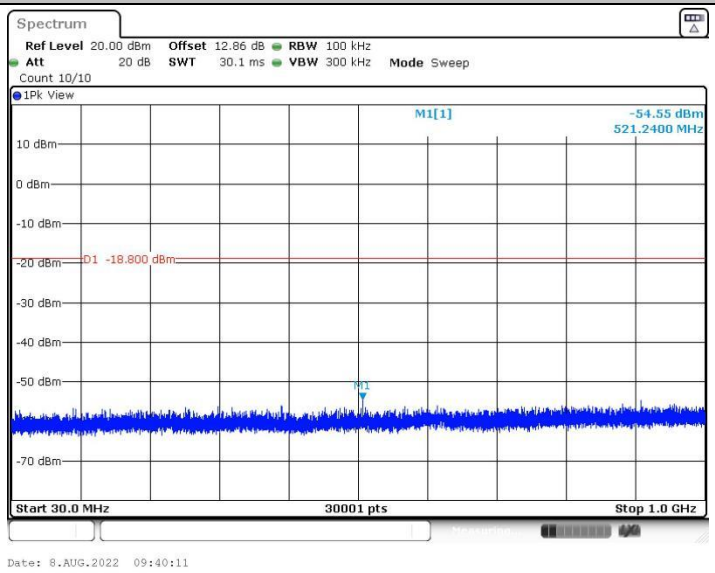

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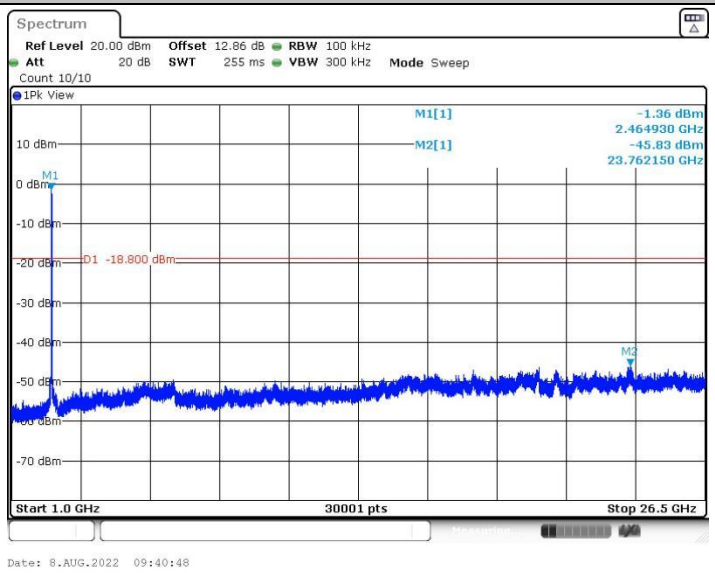

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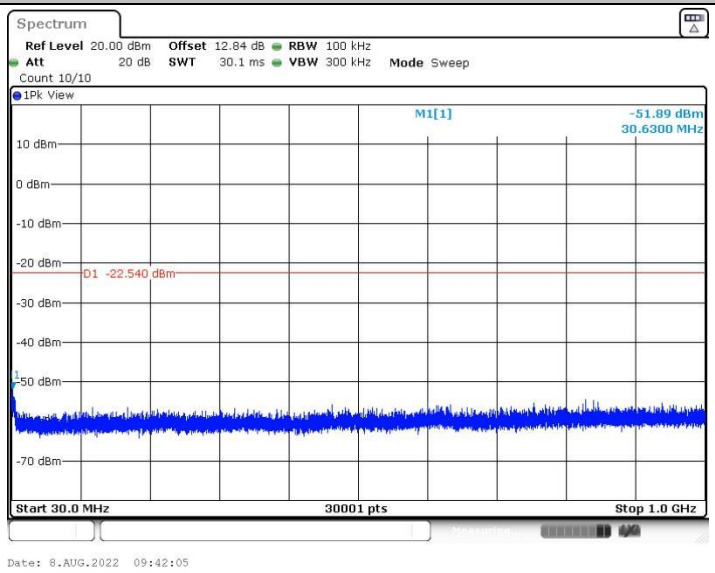

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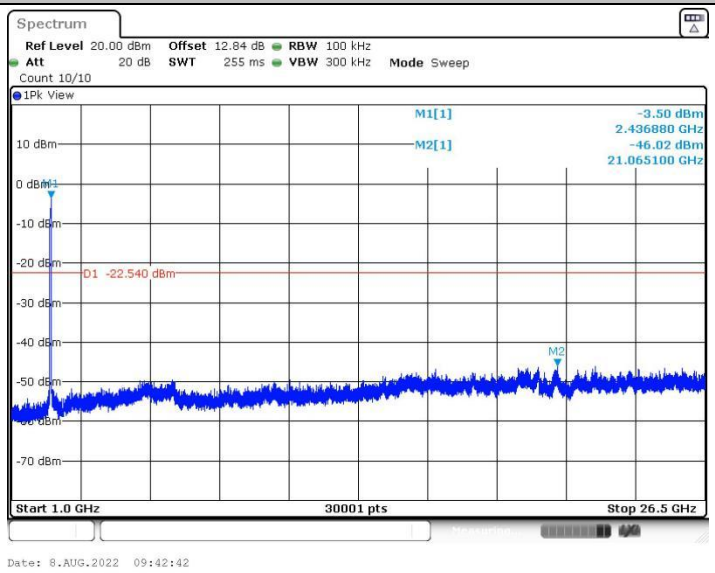

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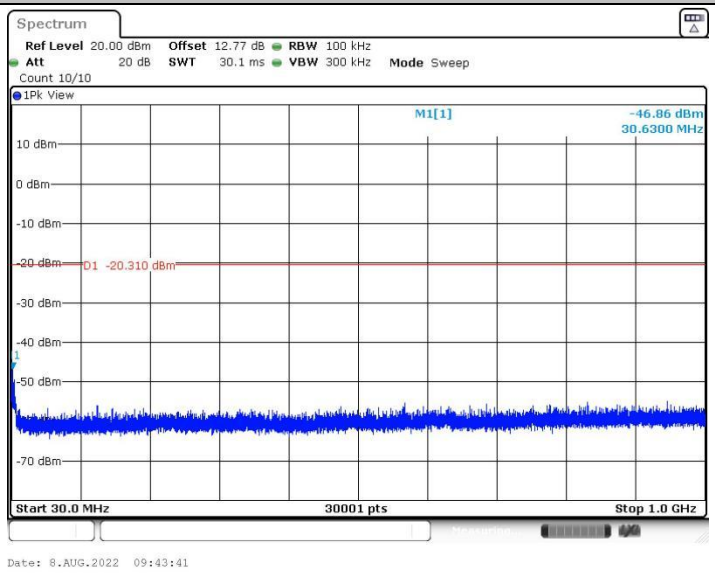

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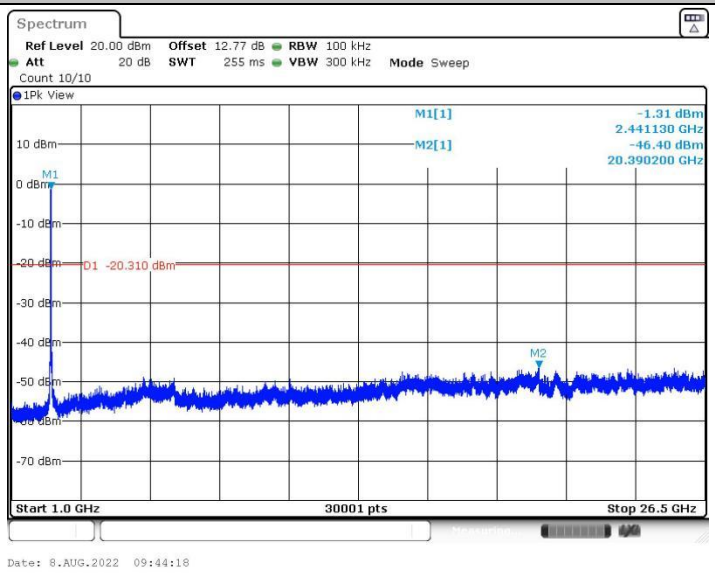
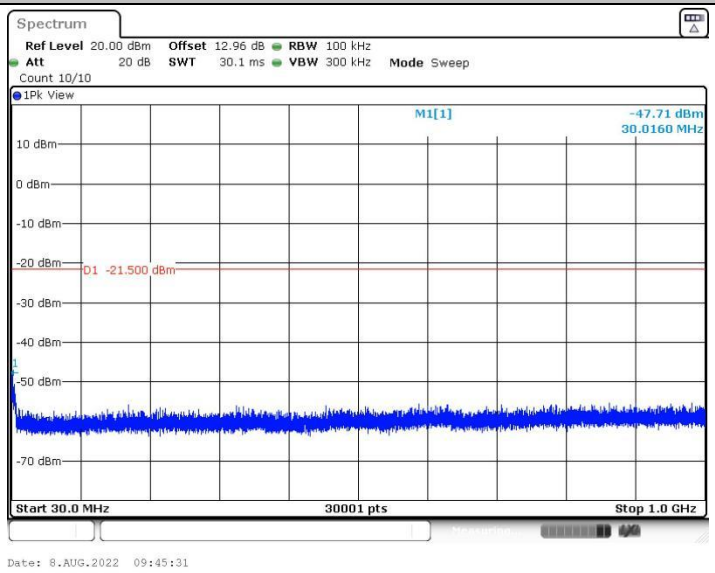


11N40SISO_Ant1_2452_30~1000



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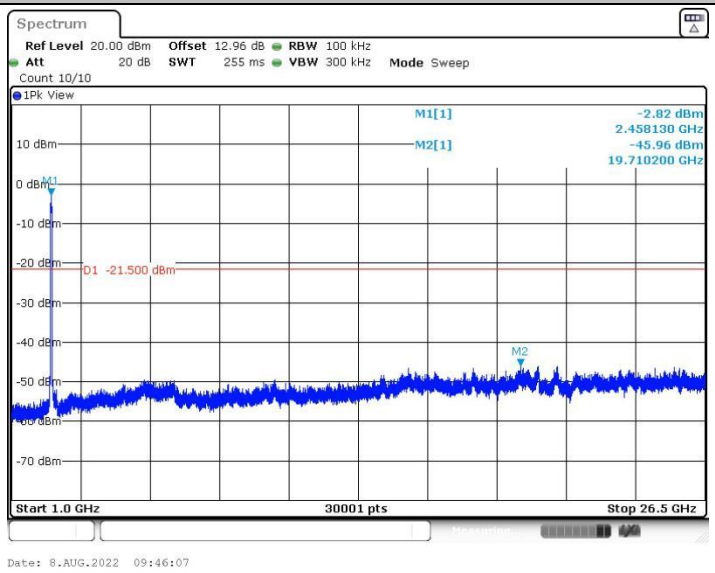
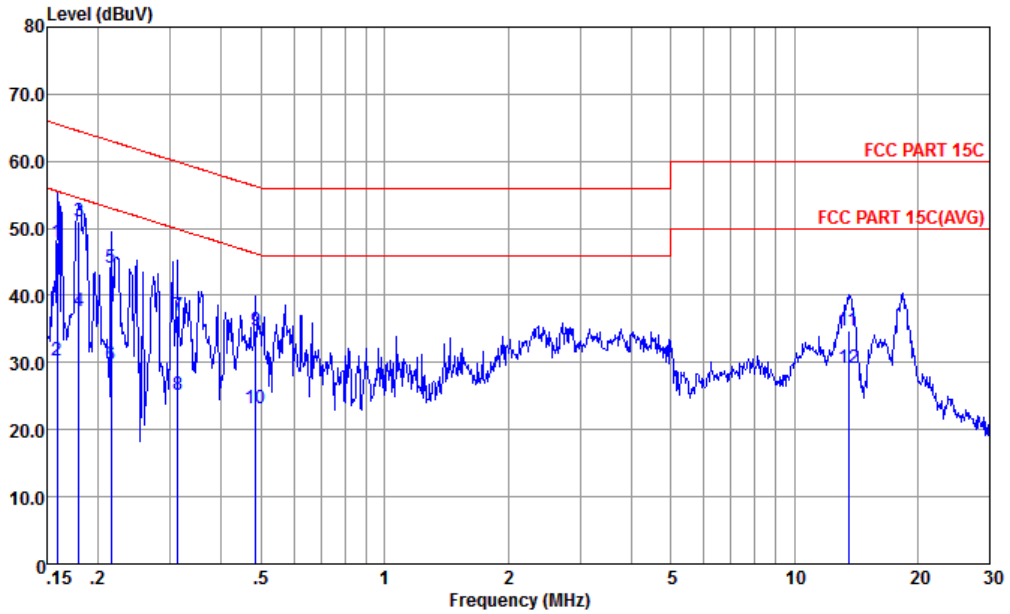


Appendix B. AC Conducted Emission Test Results

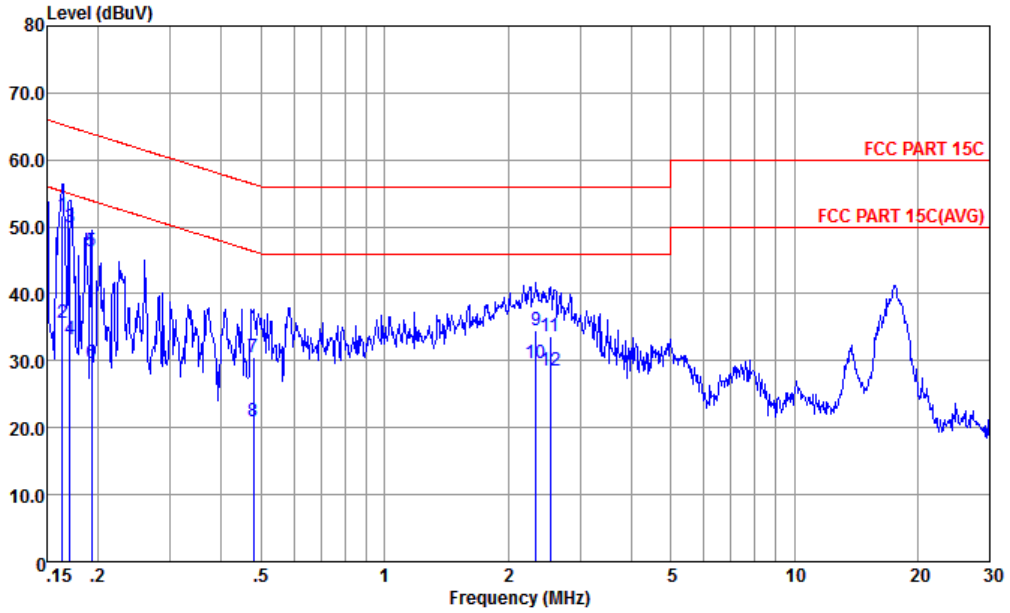
Test Engineer :	Amos Zhang	**Temperature :**	25.3~26.2℃
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : CO01-KS
Condition : FCC PART 15C LISN-060105-L LINE

		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
		MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1		0.159	47.98	-17.54	65.52	37.50	0.02	10.46	QP
2		0.159	30.38	-25.14	55.52	19.90	0.02	10.46	Average
3	*	0.180	51.04	-13.46	64.50	40.60	0.03	10.41	QP
4		0.180	37.74	-16.76	54.50	27.30	0.03	10.41	Average
5		0.215	44.20	-18.81	63.01	33.80	0.05	10.35	QP
6		0.215	29.60	-23.41	53.01	19.20	0.05	10.35	Average
7		0.313	36.97	-22.91	59.88	26.60	0.07	10.30	QP
8		0.313	25.17	-24.71	49.88	14.80	0.07	10.30	Average
9		0.484	34.84	-21.43	56.27	24.50	0.10	10.24	QP
10		0.484	23.24	-23.03	46.27	12.90	0.10	10.24	Average
11		13.551	34.68	-25.32	60.00	24.02	0.28	10.38	QP
12		13.551	29.16	-20.84	50.00	18.50	0.28	10.38	Average

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.		



Site : CO01-KS
Condition : FCC PART 15C LISN-060105-N NEUTRAL

		Freq MHz	Level dBuV	Over Limit dB	Limit Line dBuV	Read Level dBuV	LISN Factor dB	Cable Loss dB	Remark
1	*	0.163	51.75	-13.55	65.30	41.19	0.11	10.45	QP
2		0.163	35.75	-19.55	55.30	25.19	0.11	10.45	Average
3		0.170	49.83	-15.11	64.94	39.29	0.11	10.43	QP
4		0.170	33.13	-21.81	54.94	22.59	0.11	10.43	Average
5		0.192	46.38	-17.55	63.93	35.90	0.10	10.38	QP
6		0.192	29.68	-24.25	53.93	19.20	0.10	10.38	Average
7		0.479	30.55	-25.81	56.36	20.20	0.11	10.24	QP
8		0.479	20.85	-25.51	46.36	10.50	0.11	10.24	Average
9		2.346	34.58	-21.42	56.00	24.21	0.14	10.23	QP
10		2.346	29.68	-16.32	46.00	19.31	0.14	10.23	Average
11		2.540	33.68	-22.32	56.00	23.29	0.15	10.24	QP
12		2.540	28.48	-17.52	46.00	18.09	0.15	10.24	Average

Note:

1. Level(dBμV) = Read Level(dBμV) + LISN Factor(dB) + Cable Loss(dB)
2. Over Limit(dB) = Level(dBμV) – Limit Line(dBμV)

Appendix C. Radiated Spurious Emission

Test Engineer :	Carry Xu	**Temperature :**	22~23°C
		Relative Humidity :	41~42%

Channel	Power setting
11b CH01	11
11b CH06	21
11b CH11	22
11g CH01	11
11g CH06	0
11g CH11	14
11n20 CH01	10
11n20 CH06	0
11n20 CH11	15
11n40 CH03	20
11n40 CH06	12
11n40 CH09	15

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		2386.44	54.72	-19.28	74	51.6	32.88	7.1	36.86	132	244	P	H
		2385.4	45.31	-8.69	54	42.22	32.86	7.1	36.87	132	244	A	H
	*	2412	111.61	-	-	108.43	32.9	7.13	36.85	132	244	P	H
	*	2412	104.31	-	-	101.13	32.9	7.13	36.85	132	244	A	H
		2386.18	55.21	-18.79	74	52.09	32.88	7.1	36.86	400	298	P	V
		2385.53	46.04	-7.96	54	42.92	32.88	7.1	36.86	400	298	A	V
	*	2410	111.02	-	-	107.84	32.9	7.13	36.85	400	298	P	V
	*	2412	103.75	-	-	100.57	32.9	7.13	36.85	400	298	A	V
802.11b CH 11 2462MHz		2488.6	52.96	-21.04	74	49.52	33	7.25	36.81	100	229	P	H
		2488.06	43.08	-10.92	54	39.64	33	7.25	36.81	100	229	A	H
	*	2462	108.29	-	-	104.94	32.96	7.22	36.83	100	229	P	H
	*	2462	101.1	-	-	97.75	32.96	7.22	36.83	100	229	A	H
		2485.78	53.71	-20.29	74	50.3	32.98	7.25	36.82	339	304	P	V
		2487.88	42.88	-11.12	54	39.44	33	7.25	36.81	339	304	A	V
	*	2460	107.65	-	-	104.3	32.96	7.22	36.83	339	304	P	V
	*	2462	100.36	-	-	97.01	32.96	7.22	36.83	339	304	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11b CH 01 2412MHz		4830	54.68	-19.32	74	75.61	34.2	10.25	65.38	100	126	P	H
		4830	50.82	-3.18	54	71.75	34.2	10.25	65.38	100	126	A	H
		4830	52.3	-21.7	74	73.23	34.2	10.25	65.38	301	335	P	V
		4830	49.64	-4.36	54	70.57	34.2	10.25	65.38	301	335	A	V
802.11b CH 06 2437MHz		4875	54.59	-19.41	74	75.49	34.23	10.29	65.42	100	130	P	H
		4875	50.8	-3.2	54	71.7	34.23	10.29	65.42	100	130	A	H
		7305	42.22	-31.78	74	59.55	35.86	12.72	65.91	300	0	P	H
		4875	52.25	-21.75	74	73.15	34.23	10.29	65.42	232	343	P	V
		4875	49.67	-4.33	54	70.57	34.23	10.29	65.42	232	343	A	V
		7305	42.33	-31.67	74	59.66	35.86	12.72	65.91	100	0	P	V
802.11b CH 11 2462MHz		4920	54.01	-19.99	74	74.86	34.26	10.34	65.45	100	33	P	H
		4920	50.43	-3.57	54	71.28	34.26	10.34	65.45	100	33	A	H
		7380	41.8	-32.2	74	59.3	35.88	12.73	66.11	300	0	P	H
		4920	51.87	-22.13	74	72.72	34.26	10.34	65.45	252	334	P	V
		4920	48.73	-5.27	54	69.58	34.26	10.34	65.45	252	334	A	V
		7380	42.09	-31.91	74	59.59	35.88	12.73	66.11	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

WIFI 802.11g (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 01 2412MHz		2389.95	69.54	-4.46	74	66.42	32.88	7.1	36.86	278	248	P	H
		2389.95	52.45	-1.55	54	49.33	32.88	7.1	36.86	278	248	A	H
	*	2410	107.18	-	-	104	32.9	7.13	36.85	278	248	P	H
	*	2406	99.65	-	-	96.47	32.9	7.13	36.85	278	248	A	H
		2389.95	69.93	-4.07	74	66.81	32.88	7.1	36.86	397	297	P	V
		2389.95	51.96	-2.04	54	48.84	32.88	7.1	36.86	397	297	A	V
	*	2406	106.35	-	-	103.17	32.9	7.13	36.85	397	297	P	V
	*	2412	98.93	-	-	95.75	32.9	7.13	36.85	397	297	A	V
802.11g CH 11 2462MHz		2483.5	68.61	-5.39	74	65.2	32.98	7.25	36.82	382	0	P	H
		2483.5	52.48	-1.52	54	49.07	32.98	7.25	36.82	382	0	A	H
	*	2460	108.14	-	-	104.79	32.96	7.22	36.83	382	0	P	H
	*	2462	100.31	-	-	96.96	32.96	7.22	36.83	382	0	A	H
		2483.5	66.46	-7.54	74	63.05	32.98	7.25	36.82	338	303	P	V
		2483.5	49.87	-4.13	54	46.46	32.98	7.25	36.82	338	303	A	V
	*	2466	106.53	-	-	103.18	32.96	7.22	36.83	338	303	P	V
	*	2462	98.32	-	-	94.97	32.96	7.22	36.83	338	303	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

WIFI 802.11g (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 01 2412MHz		4830	48.51	-25.49	74	69.44	34.2	10.25	65.38	300	0	P	H
		4830	47.67	-26.33	74	68.6	34.2	10.25	65.38	100	0	P	V
802.11g CH 06 2437MHz		4875	54.23	-19.77	74	75.13	34.23	10.29	65.42	100	128	P	H
		4875	45.58	-8.42	54	66.48	34.23	10.29	65.42	100	128	A	H
		7305	50.73	-23.27	74	68.06	35.86	12.72	65.91	300	0	P	H
		4875	52.25	-21.75	74	73.15	34.23	10.29	65.42	252	16	P	V
		4875	44.03	-9.97	54	64.93	34.23	10.29	65.42	252	16	A	V
		7305	47.77	-26.23	74	65.1	35.86	12.72	65.91	100	0	P	V
802.11g CH 11 2462MHz		4920	52.57	-21.43	74	73.42	34.26	10.34	65.45	100	128	P	H
		4920	43.21	-10.79	54	64.06	34.26	10.34	65.45	100	128	A	H
		7380	45.68	-28.32	74	63.18	35.88	12.73	66.11	300	0	P	H
		4920	49.2	-24.8	74	70.05	34.26	10.34	65.45	100	0	P	V
		7380	43.08	-30.92	74	60.58	35.88	12.73	66.11	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

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 01 2412MHz		2389.95	67.33	-6.67	74	64.21	32.88	7.1	36.86	166	255	P	H
		2389.95	52.57	-1.43	54	49.45	32.88	7.1	36.86	166	255	A	H
	*	2410	106.91	-	-	103.73	32.9	7.13	36.85	166	255	P	H
	*	2406	99.3	-	-	96.12	32.9	7.13	36.85	166	255	A	H
		2389.82	66.91	-7.09	74	63.79	32.88	7.1	36.86	400	278	P	V
		2389.95	52.2	-1.8	54	49.08	32.88	7.1	36.86	400	278	A	V
	*	2408	105.45	-	-	102.27	32.9	7.13	36.85	400	278	P	V
	*	2408	97.58	-	-	94.4	32.9	7.13	36.85	400	278	A	V
802.11n HT20 CH 11 2462MHz		2485.42	68.56	-5.44	74	65.15	32.98	7.25	36.82	383	0	P	H
		2483.5	52.67	-1.33	54	49.26	32.98	7.25	36.82	383	0	A	H
	*	2466	107.6	-	-	104.25	32.96	7.22	36.83	383	0	P	H
	*	2462	99.81	-	-	96.46	32.96	7.22	36.83	383	0	A	H
		2484.94	63.75	-10.25	74	60.34	32.98	7.25	36.82	386	302	P	V
		2483.5	48.22	-5.78	54	44.81	32.98	7.25	36.82	386	302	A	V
	*	2460	105.5	-	-	102.15	32.96	7.22	36.83	386	302	P	V
	*	2454	97.88	-	-	94.53	32.96	7.22	36.83	386	302	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 01 2412MHz		4830	48.5	-25.5	74	69.43	34.2	10.25	65.38	300	0	P	H
		4830	47.22	-26.78	74	68.15	34.2	10.25	65.38	100	0	P	V
802.11n HT20 CH 06 2437MHz		4875	55.2	-18.8	74	76.1	34.23	10.29	65.42	100	130	P	H
		4875	44.96	-9.04	54	65.86	34.23	10.29	65.42	100	130	A	H
		7305	48.55	-25.45	74	65.88	35.86	12.72	65.91	300	0	P	H
		4875	53.32	-20.68	74	74.22	34.23	10.29	65.42	331	258	P	V
		4875	43.26	-10.74	54	64.16	34.23	10.29	65.42	331	258	A	V
		7305	48.71	-25.29	74	66.04	35.86	12.72	65.91	100	0	P	V
802.11n HT20 CH 11 2462MHz		4920	52.39	-21.61	74	73.24	34.26	10.34	65.45	158	17	P	H
		4920	43.88	-10.12	54	64.73	34.26	10.34	65.45	158	17	A	H
		7380	44.67	-29.33	74	62.17	35.88	12.73	66.11	300	0	P	H
		4920	49.61	-24.39	74	70.46	34.26	10.34	65.45	100	0	P	V
		7380	42.51	-31.49	74	60.01	35.88	12.73	66.11	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

WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 03 2422MHz		2382.28	65.03	-8.97	74	61.94	32.86	7.1	36.87	166	355	P	H
		2387.48	52.79	-1.21	54	49.67	32.88	7.1	36.86	166	355	A	H
		2487.82	52.99	-21.01	74	49.55	33	7.25	36.81	166	355	P	H
		2489.62	41.86	-12.14	54	38.42	33	7.25	36.81	166	355	A	H
	*	2426	103.46	-	-	100.23	32.92	7.16	36.85	166	355	P	H
	*	2420	95.33	-	-	92.1	32.92	7.16	36.85	166	355	A	H
		2387.61	62.98	-11.02	74	59.86	32.88	7.1	36.86	400	302	P	V
		2387.74	52.45	-1.55	54	49.33	32.88	7.1	36.86	400	302	A	V
		2498.74	50.25	-23.75	74	46.78	33	7.28	36.81	400	302	P	V
		2484.28	39.62	-14.38	54	36.21	32.98	7.25	36.82	400	302	A	V
	*	2412	101.15	-	-	97.97	32.9	7.13	36.85	400	302	P	V
	*	2410	93.07	-	-	89.89	32.9	7.13	36.85	400	302	A	V
802.11n HT40 CH 06 2437MHz		2385.4	67.81	-6.19	74	64.72	32.86	7.1	36.87	165	358	P	H
		2389.56	52.73	-1.27	54	49.61	32.88	7.1	36.86	165	358	A	H
		2486.74	62.96	-11.04	74	59.55	32.98	7.25	36.82	165	358	P	H
		2483.56	49.99	-4.01	54	46.58	32.98	7.25	36.82	165	358	A	H
	*	2424	105.16	-	-	101.93	32.92	7.16	36.85	165	358	P	H
	*	2420	97.49	-	-	94.26	32.92	7.16	36.85	165	358	A	H
		2385.4	65.05	-8.95	74	61.96	32.86	7.1	36.87	382	285	P	V
		2389.82	51.3	-2.7	54	48.18	32.88	7.1	36.86	382	285	A	V
		2483.56	62.48	-11.52	74	59.07	32.98	7.25	36.82	382	285	P	V
		2483.5	49.13	-4.87	54	45.72	32.98	7.25	36.82	382	285	A	V
	*	2452	102.87	-	-	99.58	32.94	7.19	36.84	382	285	P	V
	*	2434	95.48	-	-	92.25	32.92	7.16	36.85	382	285	A	V

802.11n HT40 CH 09 2452MHz		2389.56	60.02	-13.98	74	56.9	32.88	7.1	36.86	352	357	P	H
		2389.69	45.97	-8.03	54	42.85	32.88	7.1	36.86	352	357	A	H
		2483.68	66.03	-7.97	74	62.62	32.98	7.25	36.82	352	357	P	H
		2483.56	49.72	-4.28	54	46.31	32.98	7.25	36.82	352	357	A	H
	*	2438	103.36	-	-	100.07	32.94	7.19	36.84	352	357	P	H
	*	2438	95.12	-	-	91.83	32.94	7.19	36.84	352	357	A	H
		2389.17	58.46	-15.54	74	55.34	32.88	7.1	36.86	382	284	P	V
		2389.95	45.26	-8.74	54	42.14	32.88	7.1	36.86	382	284	A	V
		2483.5	68.84	-5.16	74	65.43	32.98	7.25	36.82	382	284	P	V
		2483.5	52.77	-1.23	54	49.36	32.98	7.25	36.82	382	284	A	V
	*	2438	103.76	-	-	100.47	32.94	7.19	36.84	382	284	P	V
	*	2434	95.88	-	-	92.65	32.92	7.16	36.85	382	284	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n		4845	45.68	-28.32	74	66.61	34.21	10.25	65.39	300	0	P	H
HT40		7260	42.23	-31.77	74	59.42	35.85	12.72	65.76	300	0	P	H
CH 03		4845	45.75	-28.25	74	66.68	34.21	10.25	65.39	100	0	P	V
2422MHz		7260	41.8	-32.2	74	58.99	35.85	12.72	65.76	100	0	P	V
802.11n		4875	47.41	-26.59	74	68.31	34.23	10.29	65.42	300	0	P	H
HT40		7305	43.19	-30.81	74	60.52	35.86	12.72	65.91	300	0	P	H
CH 06		4875	45.94	-28.06	74	66.84	34.23	10.29	65.42	100	0	P	V
2437MHz		7305	42.48	-31.52	74	59.81	35.86	12.72	65.91	100	0	P	V
802.11n		4905	47.77	-26.23	74	68.62	34.25	10.34	65.44	300	0	P	H
HT40		7350	42.54	-31.46	74	60.01	35.87	12.72	66.06	300	0	P	H
CH 09		4905	47.91	-26.09	74	68.76	34.25	10.34	65.44	100	0	P	V
2452MHz		7350	42.1	-31.9	74	59.57	35.87	12.72	66.06	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 WIFI 802.11n HT40 (LF)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz 802.11n HT40 LF		30	21.98	-18.02	40	28.82	24.8	0.76	32.4	-	-	P	H
		159.98	18.99	-24.51	43.5	33.35	16.2	1.84	32.4	-	-	P	H
		320.03	23.36	-22.64	46	33.83	19.3	2.63	32.4	-	-	P	H
		448.07	23.1	-22.9	46	29.53	22.84	3.13	32.4	-	-	P	H
		565.44	25.75	-20.25	46	28.72	26.1	3.33	32.4	-	-	P	H
		754.59	28.67	-17.33	46	28.77	28.1	4.08	32.28	-	-	P	H
		42.61	21.2	-18.8	40	34.89	17.8	0.91	32.4	-	-	P	V
		64.92	20.08	-19.92	40	39.55	11.8	1.13	32.4	-	-	P	V
		250.19	19.85	-26.15	46	31.75	18.4	2.1	32.4	-	-	P	V
		415.09	21.12	-24.88	46	28.18	22.3	3.04	32.4	-	-	P	V
		566.41	25.52	-20.48	46	28.52	26.06	3.34	32.4	-	-	P	V
		780.78	29.38	-16.62	46	29.29	28.1	4.17	32.18	-	-	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:

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		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”.

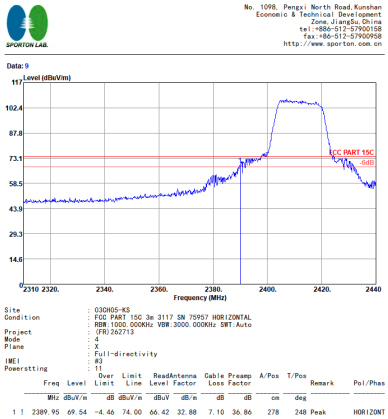
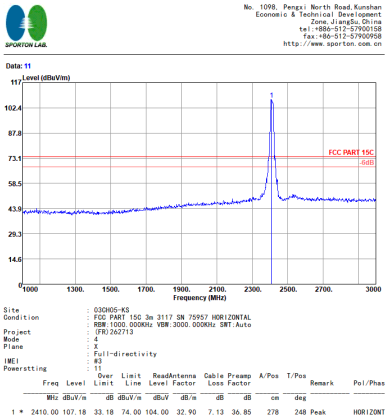
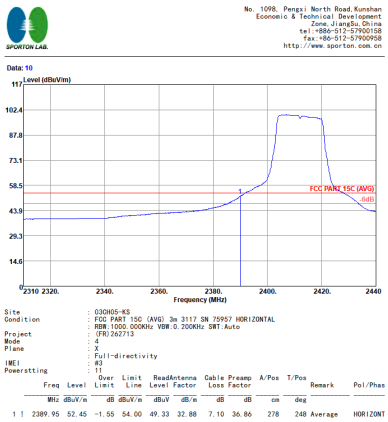
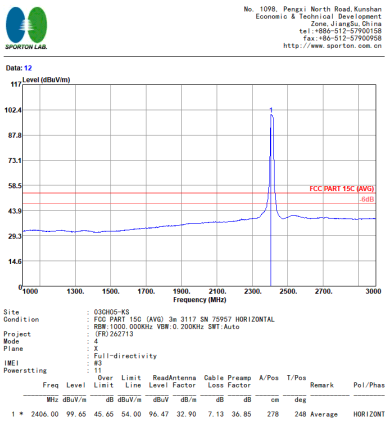
Appendix D. Radiated Spurious Emission Plots

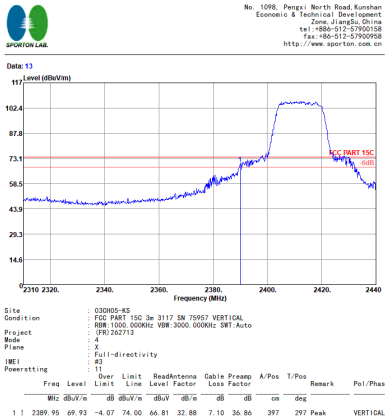
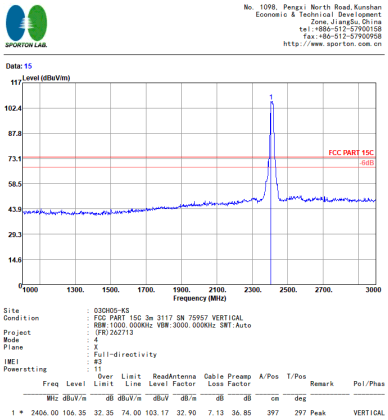
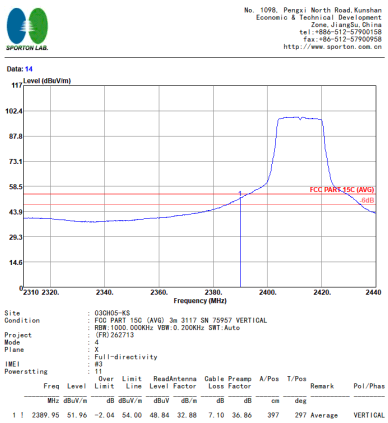
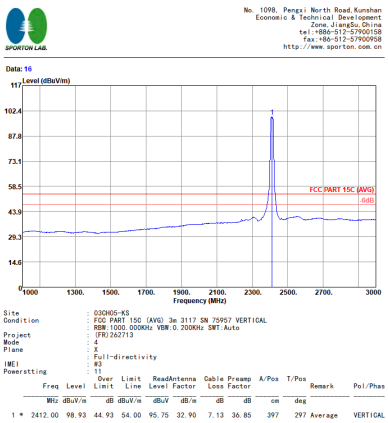
Note symbol

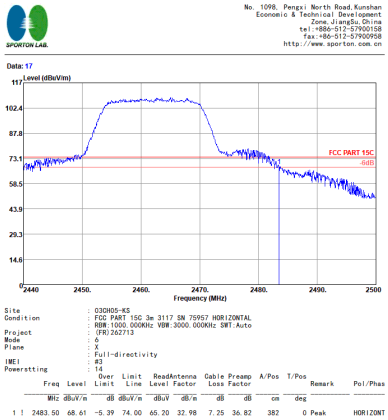
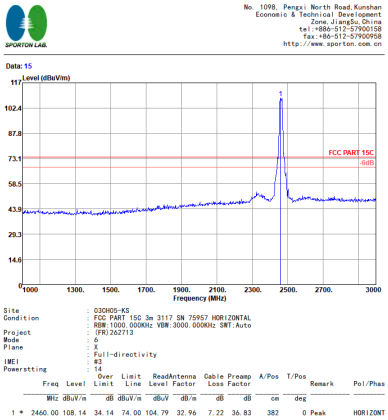
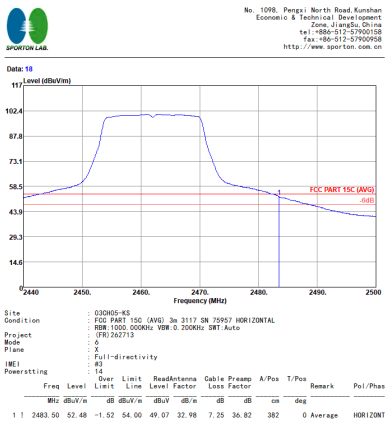
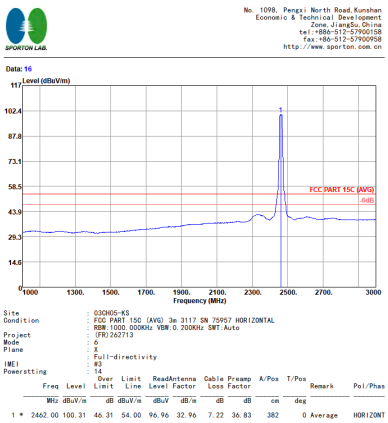
-L	**Low channel location**
-R	**High channel location**

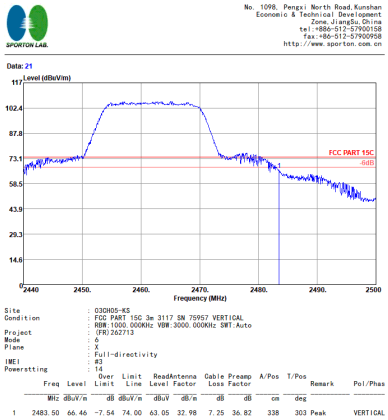
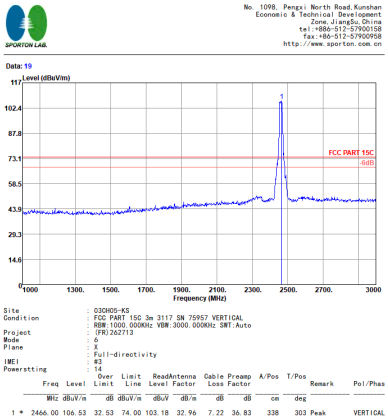
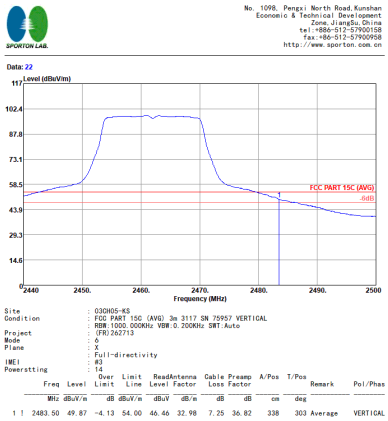
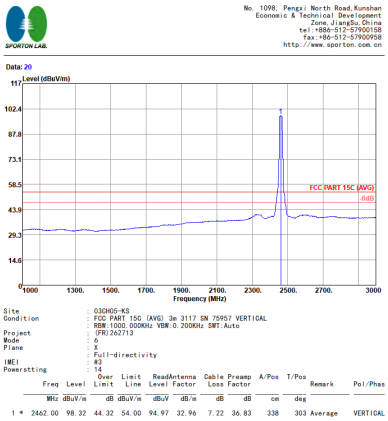
2.4GHz 2400~2483.5MHz

WIFI 802.11g (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH01 2412MHz	
1	Horizontal	Fundamental
Peak		
Avg.		

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH01 2412MHz	
1	Vertical	Fundamental
Peak		
Avg.		

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH11 2462MHz	
1	Horizontal	Fundamental
Peak		
Avg.		

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11g CH11 2462MHz	
1	Vertical	Fundamental
Peak		
Avg.		

2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
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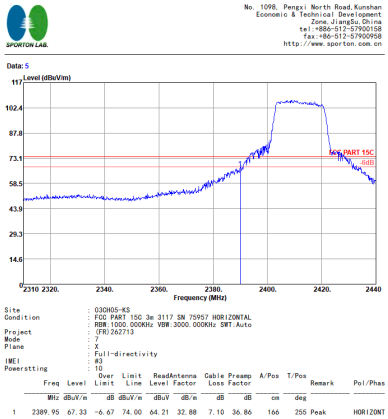
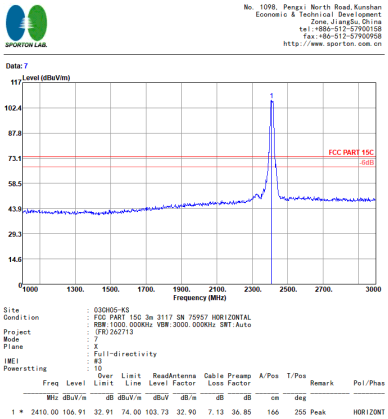
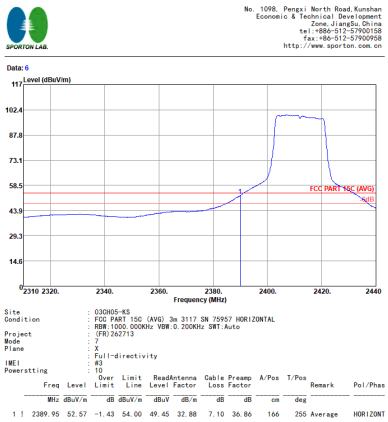
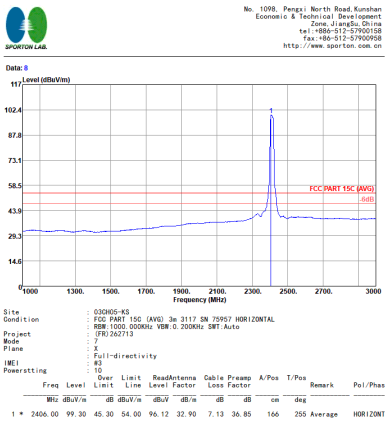
1	Horizontal	Fundamental
Peak		
Avg.		

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
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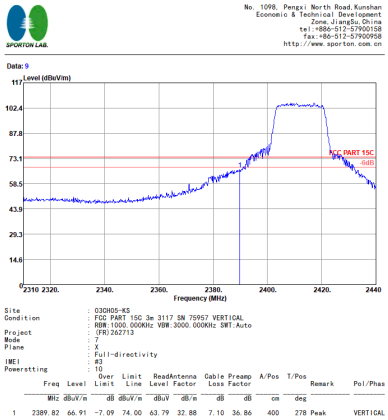
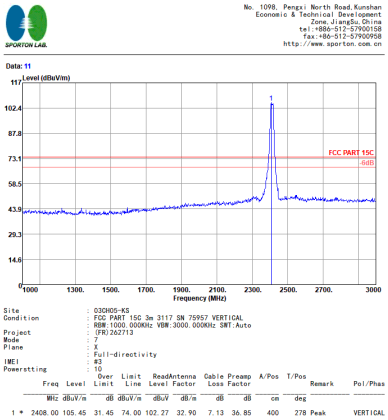
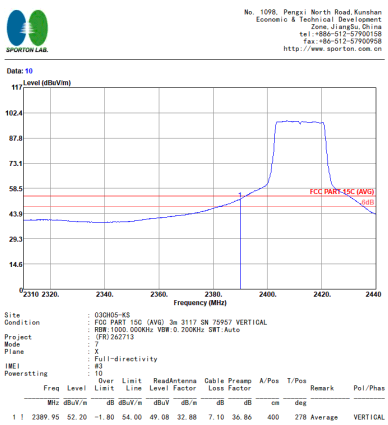
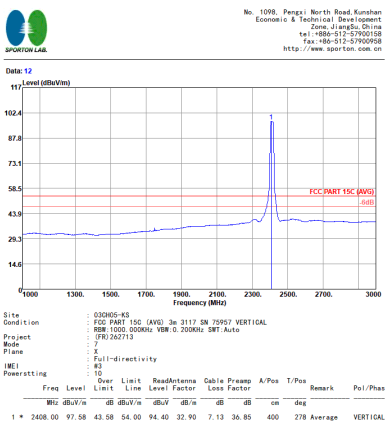
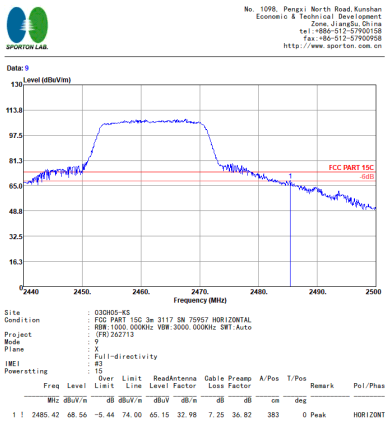
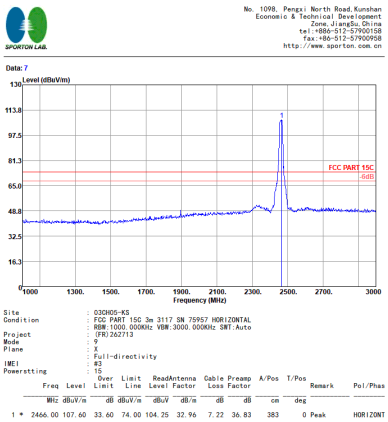
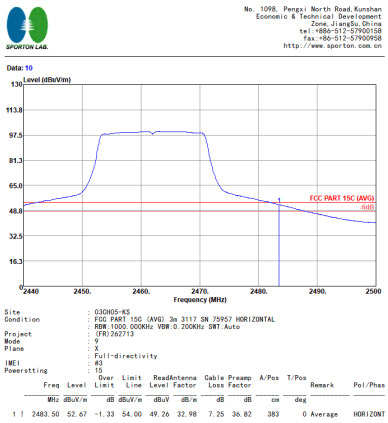
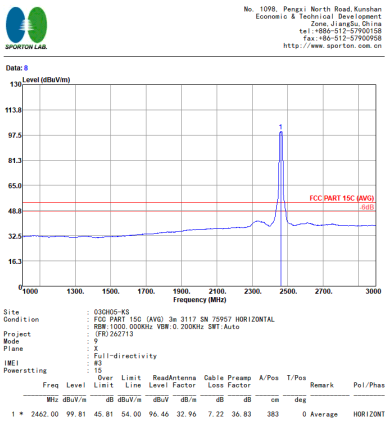
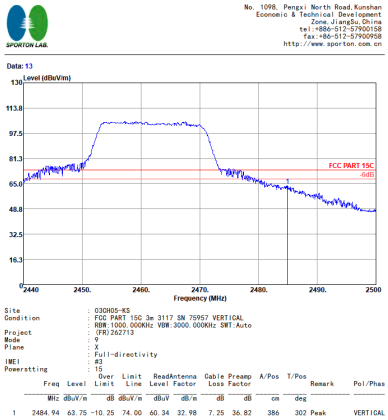
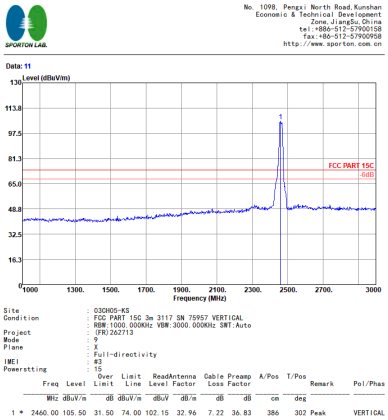
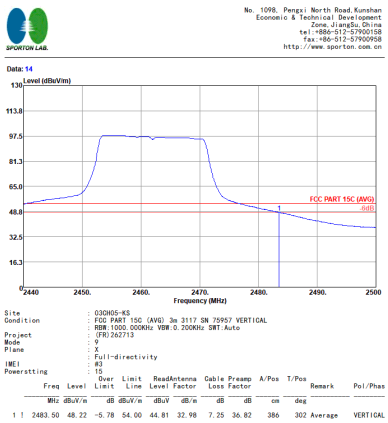
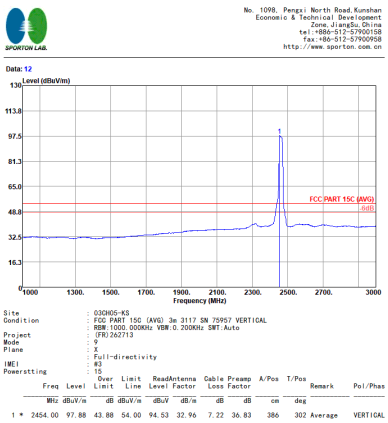
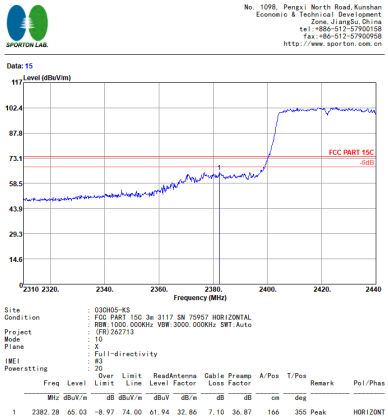
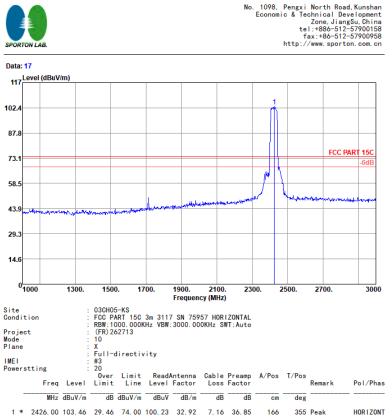
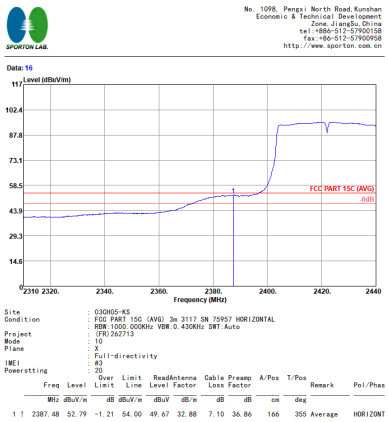
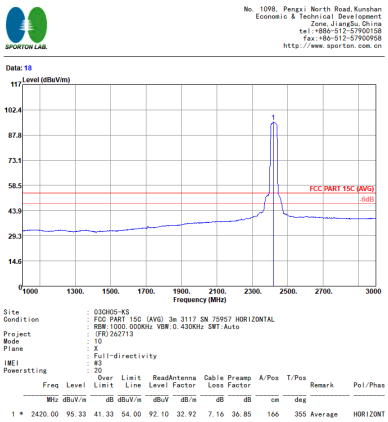
1	Vertical	Fundamental
Peak		
Avg.		

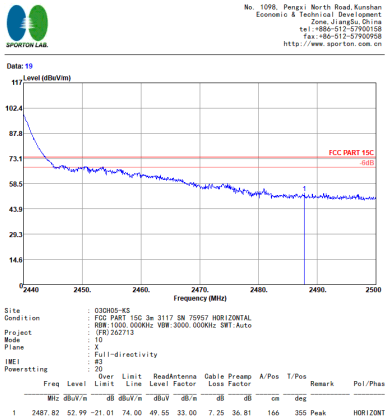
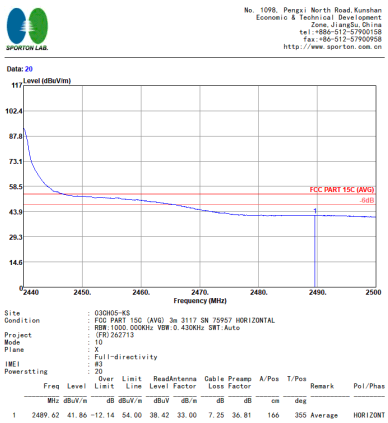
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Horizontal	Fundamental
Peak		
Avg.		

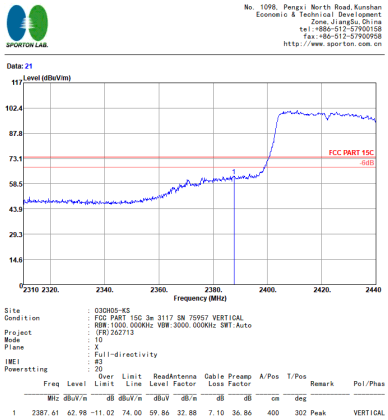
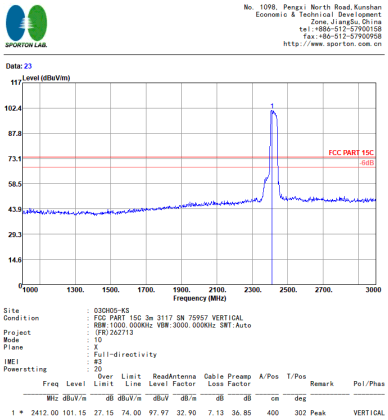
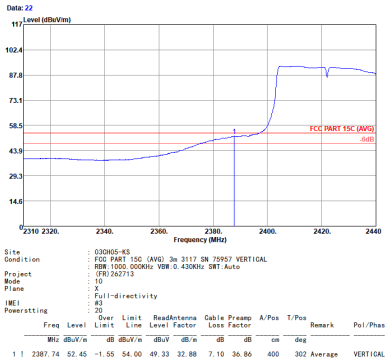
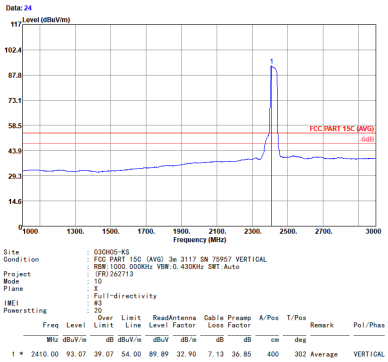
WIFI	2.4GHz 2400~2483.5MHz Fundamental @ 3m	
ANT	802.11n HT20 CH11 2462MHz	
1	Vertical	Fundamental
Peak		
Avg.		

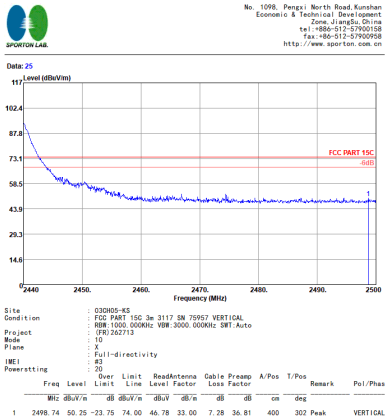
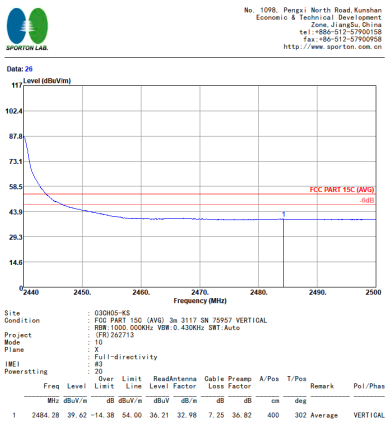
2.4GHz 2400~2483.5MHz

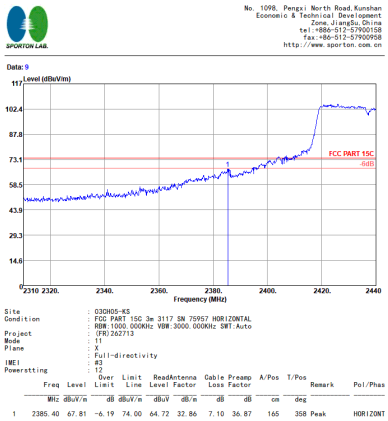
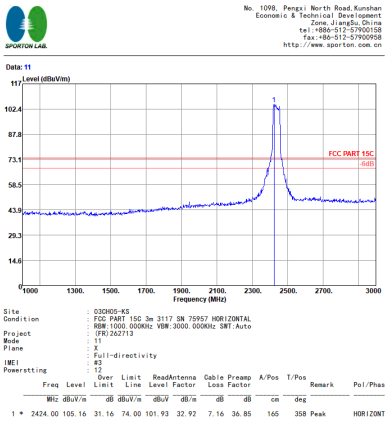
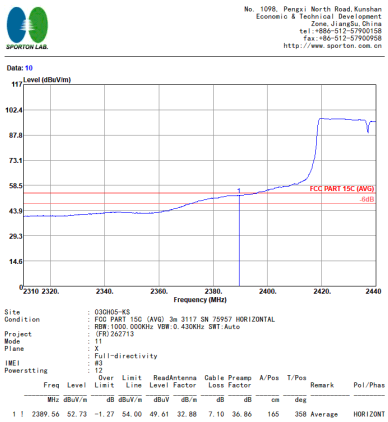
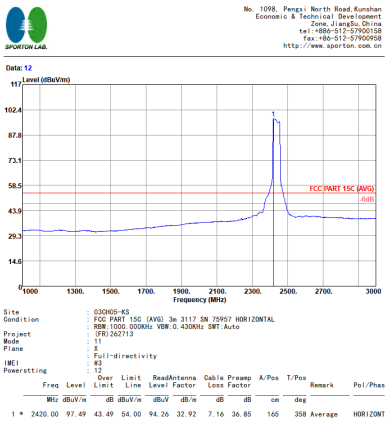
WIFI 802.11n HT40 (Band Edge @ 3m)

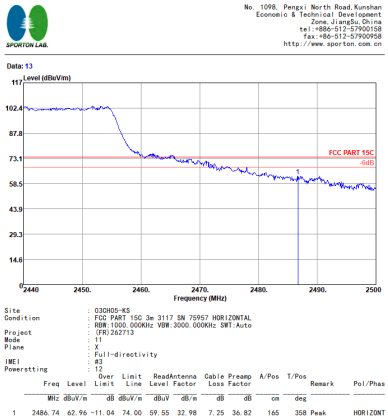
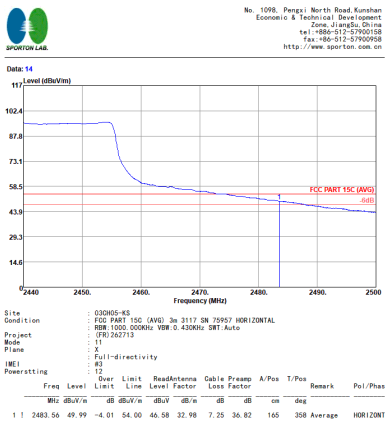
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH03 2422MHz - L	
1	Horizontal	Fundamental
Peak		
Avg.		

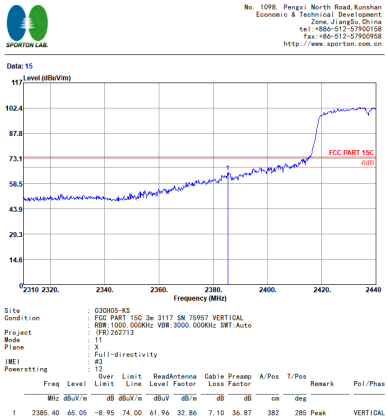
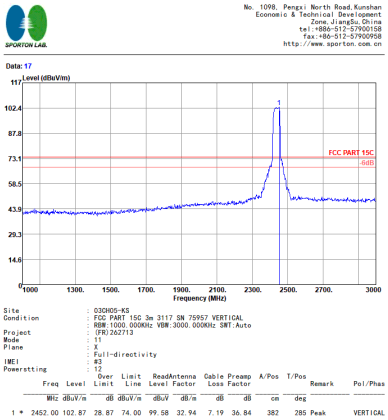
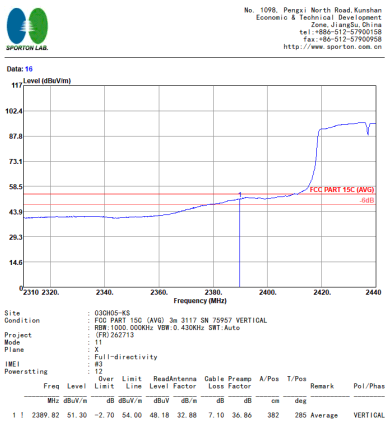
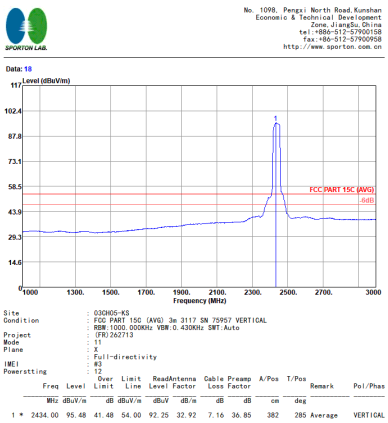
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH03 2422MHz - R	
1	Horizontal	Fundamental
Peak		Left Blank
Avg.		Left Blank

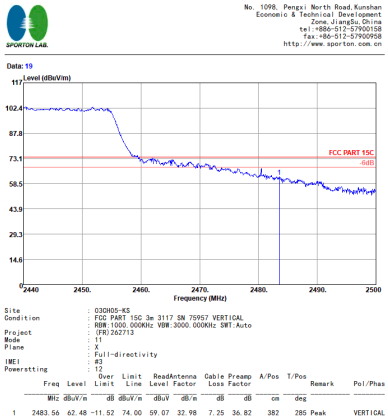
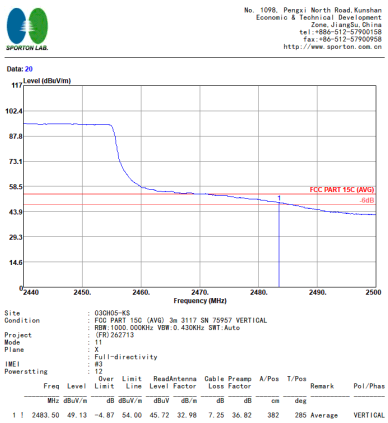
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH03 2422MHz - L	
1	Vertical	Fundamental
Peak	 No. 1098, Pengxi North Road,Kunshan Economic & Technical Development Zone,JiangSu,China tel:+886-512-57900158 fax:+86-512-57900958 http://www.sporton.com.cn Data: 21 Level (dBuV/m) FCC PART 15C -6dB Frequency (MHz) Site : 03CH05-KS Condition : FCC PART 15C 3m 3117 SN 75957 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : (FR)262713 Mode : 10 Plane : X : Full-directivity IMEI : #3 Powerstting : 20 Freq Level Over Limit Limit ReadAntenna Level Cable Loss Preamp Factor A/Pos T/Pos Remark Pol/Phas MHz dBuV/m dB dBuV/m dBuV dB/m dB dB cm deg 1 2387.61 62.98 -11.02 74.00 59.86 32.88 7.10 36.86 400 302 Peak VERTICAL	 No. 1098, Pengxi North Road,Kunshan Economic & Technical Development Zone,JiangSu,China tel:+886-512-57900158 fax:+86-512-57900958 http://www.sporton.com.cn Data: 23 Level (dBuV/m) FCC PART 15C -6dB Frequency (MHz) Site : 03CH05-KS Condition : FCC PART 15C 3m 3117 SN 75957 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : (FR)262713 Mode : 10 Plane : X : Full-directivity IMEI : #3 Powerstting : 20 Freq Level Over Limit Limit ReadAntenna Level Cable Loss Preamp Factor A/Pos T/Pos Remark Pol/Phas MHz dBuV/m dB dBuV/m dBuV dB/m dB dB cm deg 1 * 2412.00 101.15 27.15 74.00 97.97 32.90 7.13 36.85 400 302 Peak VERTICAL
Avg.	 No. 1098, Pengxi North Road,Kunshan Economic & Technical Development Zone,JiangSu,China tel:+886-512-57900158 fax:+86-512-57900958 http:/www.sporton.com.cn Data: 22 Level (dBuV/m) FCC PART 15C (AVG) -6dB Frequency (MHz) Site : 03CH05-KS Condition : FCC PART 15C (AVG) 3m 3117 SN 75957 VERTICAL : RBW:1000.000KHz VBW:0.430KHz SWT:Auto Project : (FR)262713 Mode : 10 Plane : X : Full-directivity IMEI : #3 Powerstting : 20 Freq Level Over Limit Limit ReadAntenna Level Cable Loss Preamp Factor A/Pos T/Pos Remark Pol/Phas MHz dBuV/m dB dBuV/m dBuV dB/m dB dB cm deg 1 ! 2387.74 52.45 -1.55 54.00 49.33 32.88 7.10 36.86 400 302 Average VERTICAL	 No. 1098, Pengxi North Road,Kunshan Economic & Technical Development Zone,JiangSu,China tel:+886-512-57900158 fax:+86-512-57900958 http:/www.sporton.com.cn Data: 24 Level (dBuV/m) FCC PART 15C (AVG) -6dB Frequency (MHz) Site : 03CH05-KS Condition : FCC PART 15C (AVG) 3m 3117 SN 75957 VERTICAL : RBW:1000.000KHz VBW:0.430KHz SWT:Auto Project : (FR)262713 Mode : 10 Plane : X : Full-directivity IMEI : #3 Powerstting : 20 Freq Level Over Limit Limit ReadAntenna Level Cable Loss Preamp Factor A/Pos T/Pos Remark Pol/Phas MHz dBuV/m dB dBuV/m dBuV dB/m dB dB cm deg 1 * 2410.00 93.07 39.07 54.00 89.89 32.90 7.13 36.85 400 302 Average VERTICAL

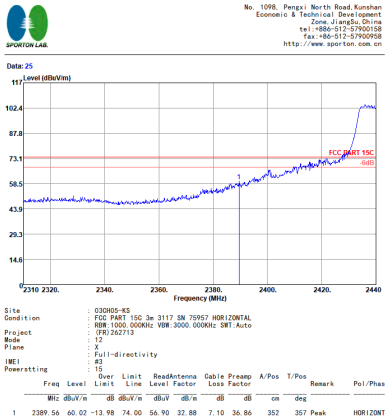
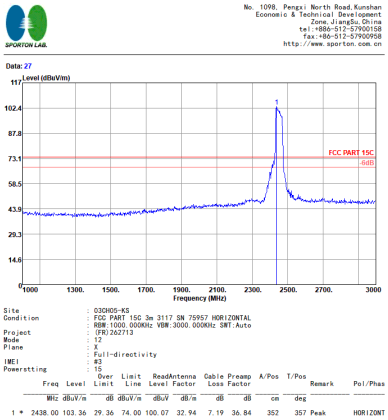
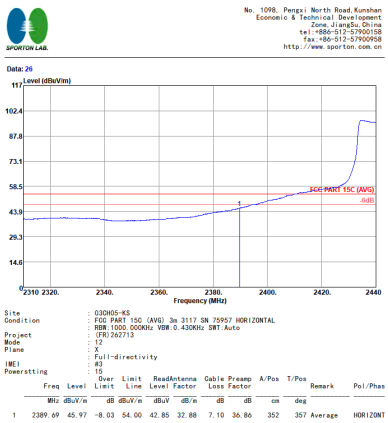
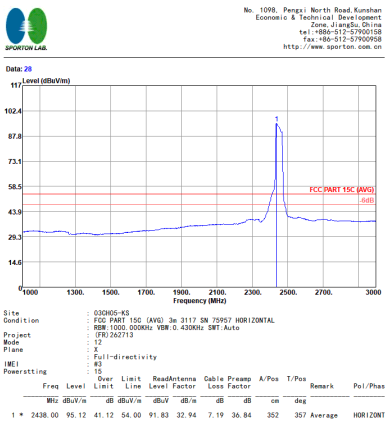
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH03 2422MHz - R	
1	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

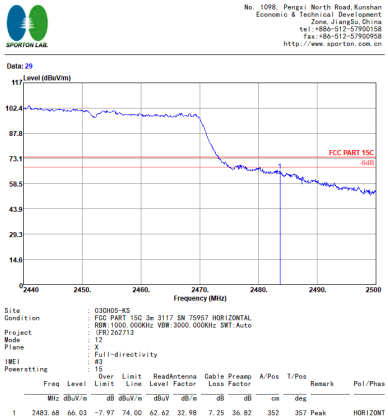
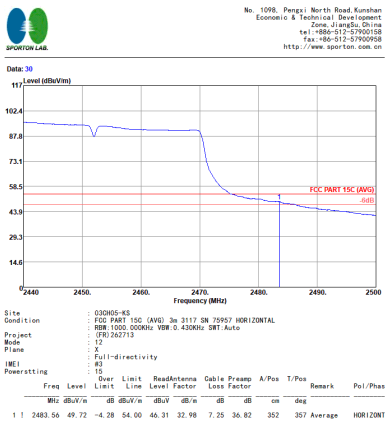
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH06 2437MHz - L	
1	Horizontal	Fundamental
Peak		
Avg.		

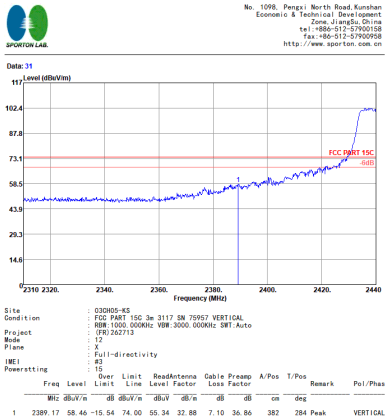
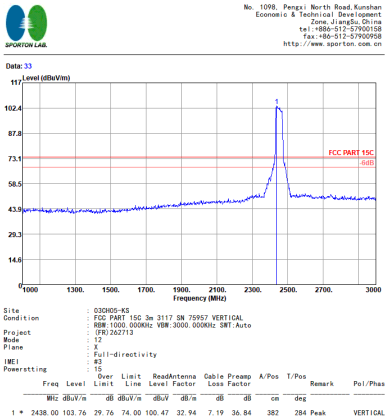
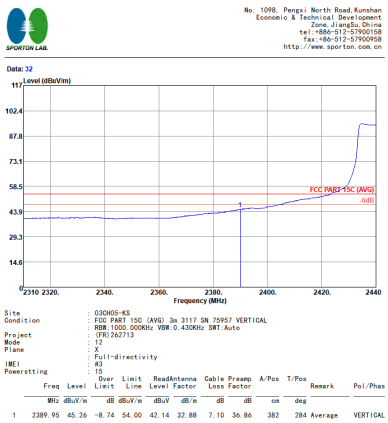
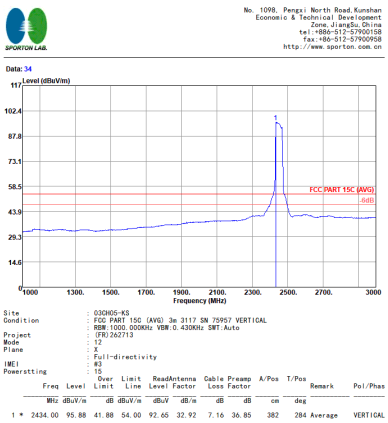
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH06 2437MHz - R	
1	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

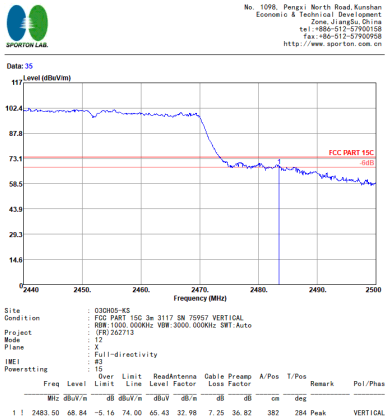
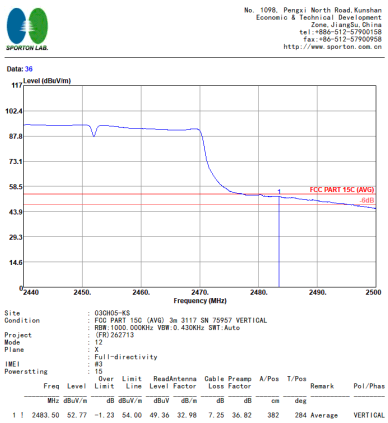
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH06 2437MHz - L	
1	Vertical	Fundamental
Peak		
Avg.		

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH06 2437MHz - R	
1	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH09 2452MHz - L	
1	Horizontal	Fundamental
Peak		
Avg.		

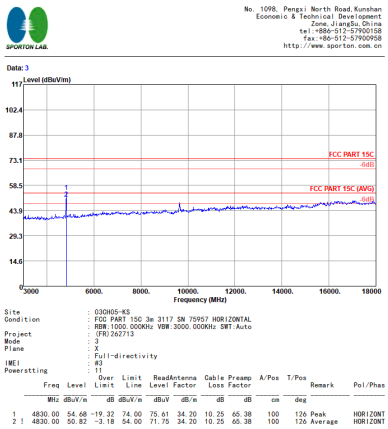
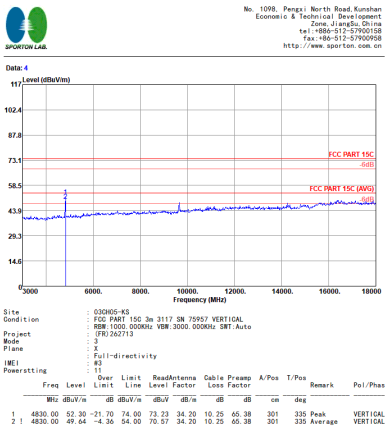
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH09 2452MHz - R	
1	Horizontal	Fundamental
Peak		Left blank
Avg.		Left blank

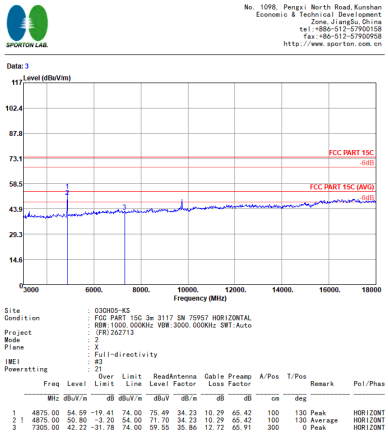
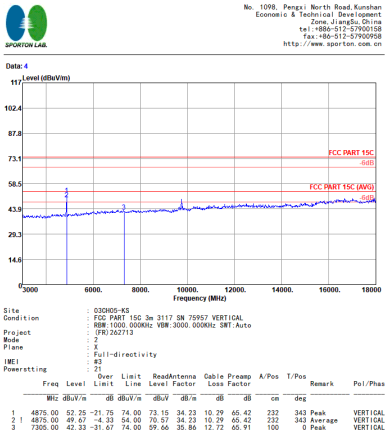
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH09 2452MHz - L	
1	Vertical	Fundamental
Peak		
Avg.		

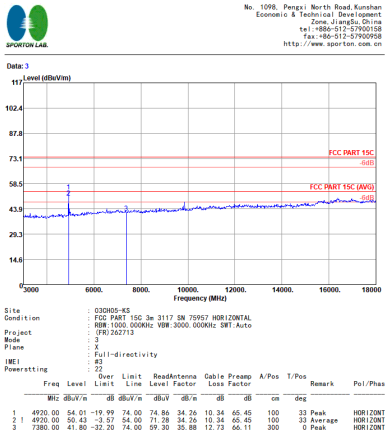
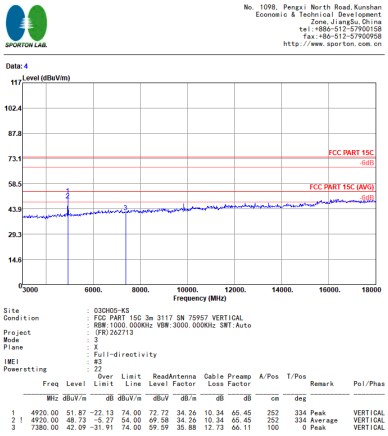
WIFI	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
ANT	802.11n HT40 CH09 2452MHz - R	
1	Vertical	Fundamental
Peak		Left blank
Avg.		Left blank

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Harmonic @ 3m)

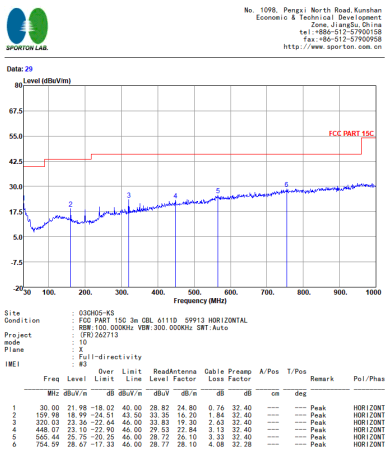
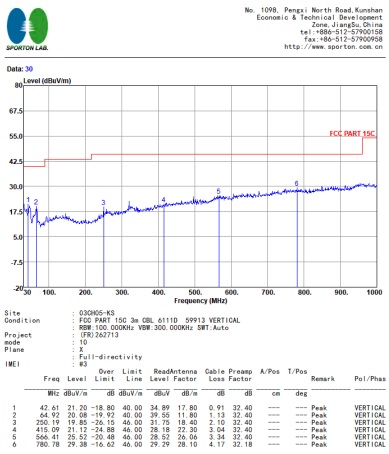
WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH01 2412MHz	
1	Horizontal	Vertical
Peak Avg.	 No. 1098, Pengxi North Road,Kunshan Economic & Technical Development Zone,JiangSu,China tel:+86-512-57900158 fax:+86-512-57900958 http://www.sporton.com.cn Data: 3 Level (dBuV/m) 117 102.4 87.8 73.1 58.5 43.9 29.3 14.6 0 FCC PART 15C -6dB FCC PART 15C (AVG) -6dB 3000 6000. 8000. 10000. 12000. 14000. 16000. 18000 Frequency (MHz) Site : 03CH05-KS Condition : FCC PART 15C 3m 3117 SN 75957 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : (FR)262713 Mode : 3 Plane : X : Full-directivity IMEI : #3 Powerstting : 11 Freq Level Over Limit Limit Limit ReadAntenna Level Cable Loss Preamp Factor Factor A/Pos T/Pos Remark Pol/Phas MHz dBuV/m dB dBuV/m dBuV dB/m dB dB cm deg 1 4830.00 54.68 -19.32 74.00 75.61 34.20 10.25 65.38 100 126 Peak HORIZONT 2 ! 4830.00 50.82 -3.18 54.00 71.75 34.20 10.25 65.38 100 126 Average 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: 4 Level (dBuV/m) 117 102.4 87.8 73.1 58.5 43.9 29.3 14.6 0 FCC PART 15C -6dB FCC PART 15C (AVG) -6dB 3000 6000. 8000. 10000. 12000. 14000. 16000. 18000 Frequency (MHz) Site : 03CH05-KS Condition : FCC PART 15C 3m 3117 SN 75957 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : (FR)262713 Mode : 3 Plane : X : Full-directivity IMEI : #3 Powerstting : 11 Freq Level Over Limit Limit Limit ReadAntenna Level Cable Loss Preamp Factor Factor A/Pos T/Pos Remark Pol/Phas MHz dBuV/m dB dBuV/m dBuV dB/m dB dB cm deg 1 4830.00 52.30 -21.70 74.00 73.23 34.20 10.25 65.38 301 335 Peak VERTICAL 2 ! 4830.00 49.64 -4.36 54.00 70.57 34.20 10.25 65.38 301 335 Average VERTICAL

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH06 2437MHz	
1	Horizontal	Vertical
Peak Avg.	 Data: 3 Level (dBuV/m) FCC PART 15C -6dB FCC PART 15C (AVG) -6dB Frequency (MHz) Site : 03CH05-KS Condition : FCC PART 15C 3m 3117 SN 75957 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : (FR)262713 Mode : 2 Plane : X : Full-directivity IMEI : #3 Powersetting : 21 Freq Level Over Limit Limit Line ReadAntenna Level Factor Cable Loss Factor Preamp Factor A/Pos Remark T/Pos Pol/Phas MHz dBuV/m dB dBuV/m dBuV dB/m dB dB cm deg 1 4875.00 54.59 -19.41 74.00 75.49 34.23 10.29 65.42 100 130 Peak HORIZONT 2 ! 4875.00 50.80 -3.20 54.00 71.70 34.23 10.29 65.42 100 130 Average HORIZONT 3 7305.00 42.22 -31.78 74.00 59.55 35.86 12.72 65.91 300 0 Peak HORIZONT	 Data: 4 Level (dBuV/m) FCC PART 15C -6dB FCC PART 15C (AVG) -6dB Frequency (MHz) Site : 03CH05-KS Condition : FCC PART 15C 3m 3117 SN 75957 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : (FR)262713 Mode : 2 Plane : X : Full-directivity IMEI : #3 Powersetting : 21 Freq Level Over Limit Limit Line ReadAntenna Level Factor Cable Loss Factor Preamp Factor A/Pos Remark T/Pos Pol/Phas MHz dBuV/m dB dBuV/m dBuV dB/m dB dB cm deg 1 4875.00 52.25 -21.75 74.00 73.15 34.23 10.29 65.42 232 343 Peak VERTICAL 2 ! 4875.00 49.67 -4.33 54.00 70.57 34.23 10.29 65.42 232 343 Average VERTICAL 3 7305.00 42.33 -31.67 74.00 59.66 35.86 12.72 65.91 100 0 Peak VERTICAL

WIFI	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
ANT	802.11b CH11 2462MHz	
1	Horizontal	Vertical
Peak Avg.	 Data: 3 Level (dBuV/m) FCC PART 15C -6dB FCC PART 15C (AVG) -6dB Frequency (MHz) Site : 03CH05-KS Condition : FCC PART 15C 3m 3117 SN 75957 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : (FR)262713 Mode : 3 Plane : X : Full-directivity IMEI : #3 Powersetting : 22 Freq Level Over Limit Limit Line ReadAntenna Level Factor Cable Loss Factor Preamp Factor A/Pos Remark T/Pos Pol/Phas MHz dBuV/m dB dBuV/m dBuV dB/m dB dB cm deg 1 4920.00 54.01 -19.99 74.00 74.86 34.26 10.34 65.45 100 33 Peak HORIZONT 2 ! 4920.00 50.43 -3.57 54.00 71.28 34.26 10.34 65.45 100 33 Average HORIZONT 3 7380.00 41.80 -32.20 74.00 59.30 35.88 12.73 66.11 300 0 Peak HORIZONT	 Data: 4 Level (dBuV/m) FCC PART 15C -6dB FCC PART 15C (AVG) -6dB Frequency (MHz) Site : 03CH05-KS Condition : FCC PART 15C 3m 3117 SN 75957 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : (FR)262713 Mode : 3 Plane : X : Full-directivity IMEI : #3 Powersetting : 22 Freq Level Over Limit Limit Line ReadAntenna Level Factor Cable Loss Factor Preamp Factor A/Pos Remark T/Pos Pol/Phas MHz dBuV/m dB dBuV/m dBuV dB/m dB dB cm deg 1 4920.00 51.87 -22.13 74.00 72.72 34.26 10.34 65.45 252 334 Peak VERTICAL 2 ! 4920.00 48.73 -5.27 54.00 69.58 34.26 10.34 65.45 252 334 Average VERTICAL 3 7380.00 42.09 -31.91 74.00 59.59 35.88 12.73 66.11 100 0 Peak VERTICAL

Emission below 1GHz

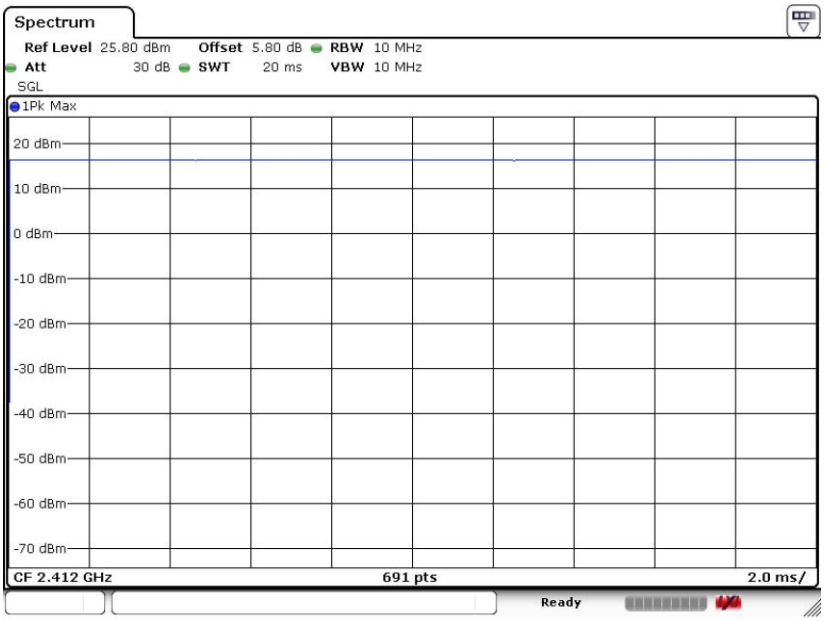
2.4GHz WIFI 802.11n HT40 (LF)

WIFI	2.4GHz 2400~2483.5MHz	
ANT	802.11n HT40 LF	
1	Horizontal	Vertical
QP / Peak		

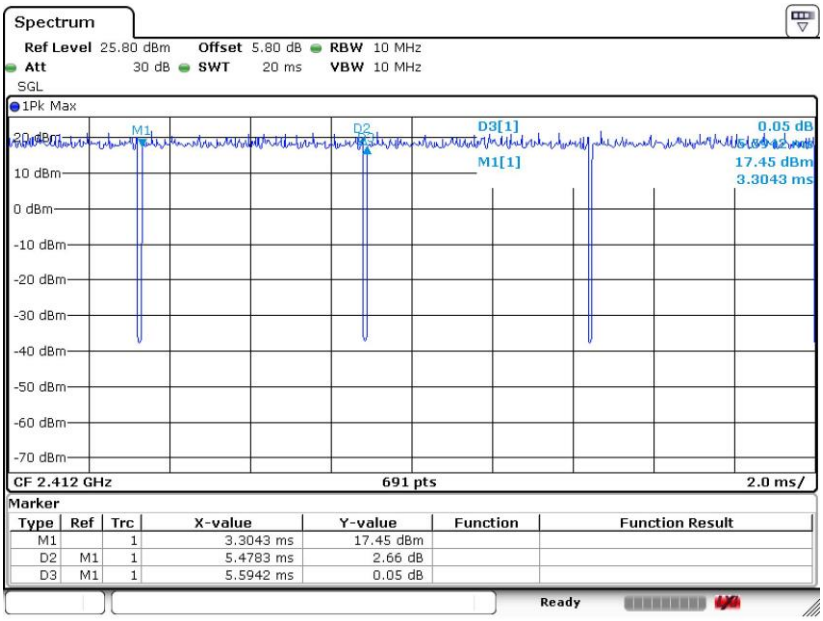
Appendix E. Duty Cycle Plots

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11b	100	-	-	10Hz
802.11g	97.93	5.478	0.183	0.2KHz
802.11n HT20	97.77	5.073	0.197	0.2KHz
802.11n HT40	96.05	2.464	0.406	0.43KHz

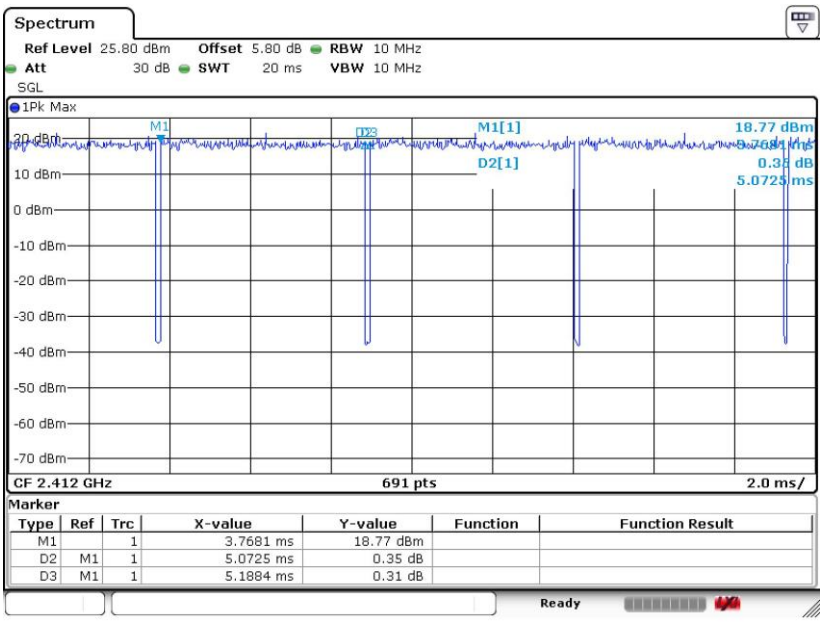
802.11b



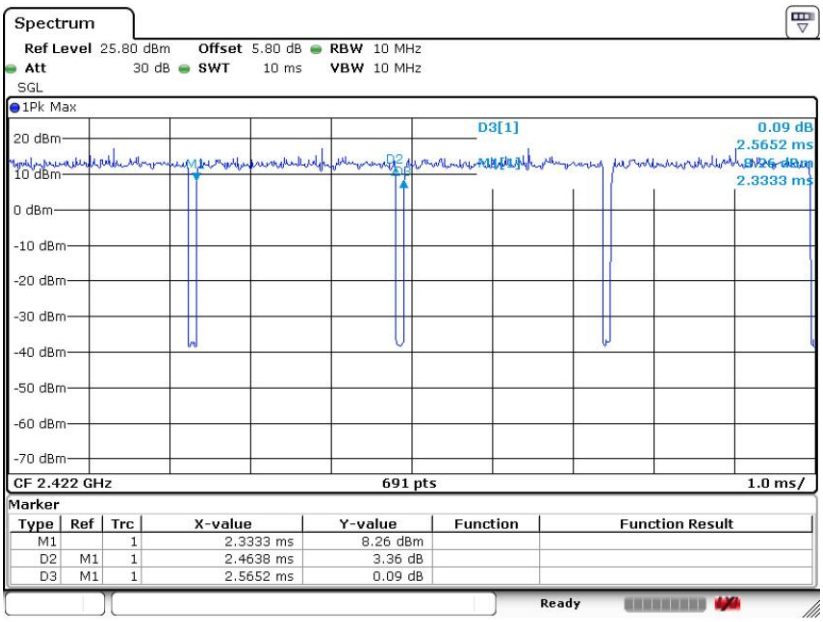
802.11g



802.11n HT20



802.11n HT40


Spectrum
Ref Level 25.80 dBm Offset 5.80 dB RBW 10 MHz
Att 30 dB SWT 10 ms VBW 10 MHz
SGL
1Pk Max
D3[1] 0.09 dB
2.5652 ms
2.3333 ms
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.422 GHz
691 pts
1.0 ms/
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.3333 ms 8.26 dBm
D2 M1 1 2.4638 ms 3.36 dB
D3 M1 1 2.5652 ms 0.09 dB
Ready