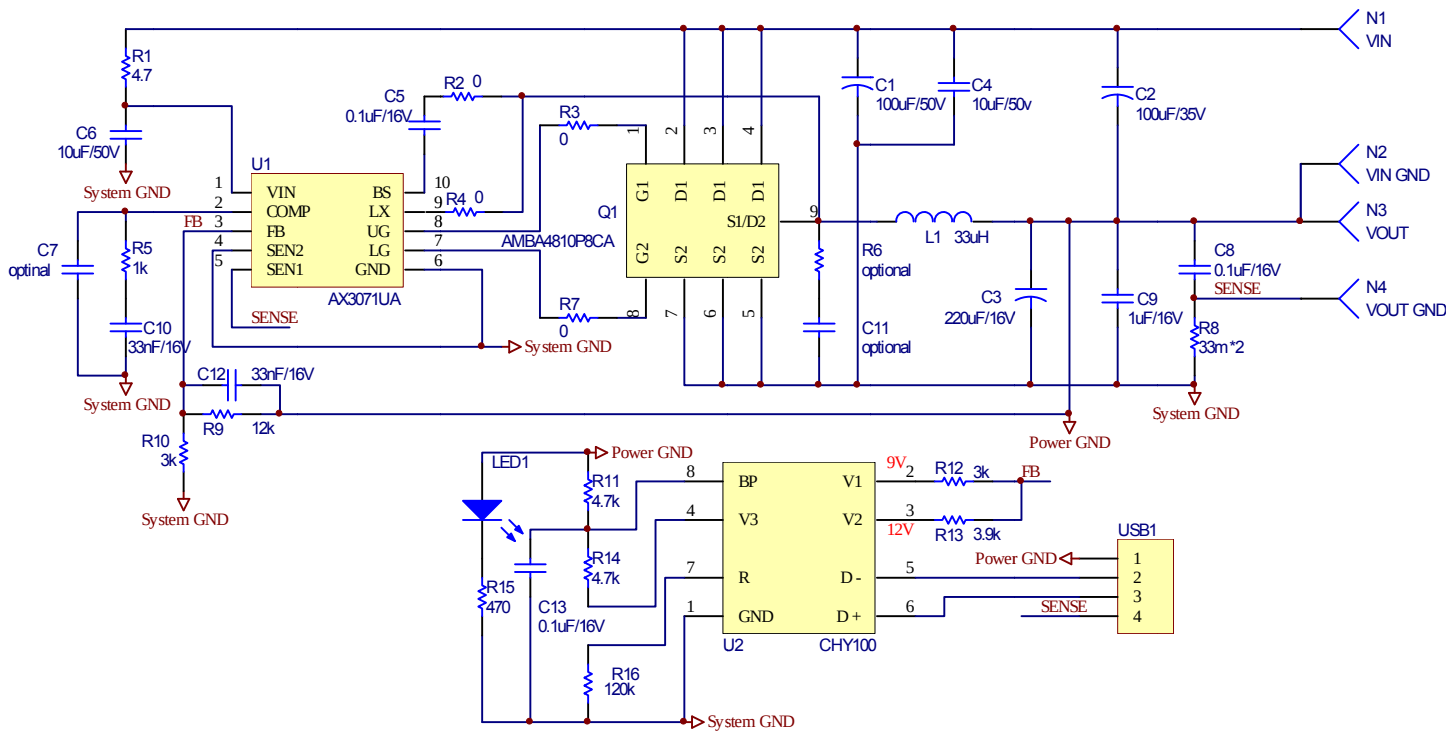


Application Circuit :



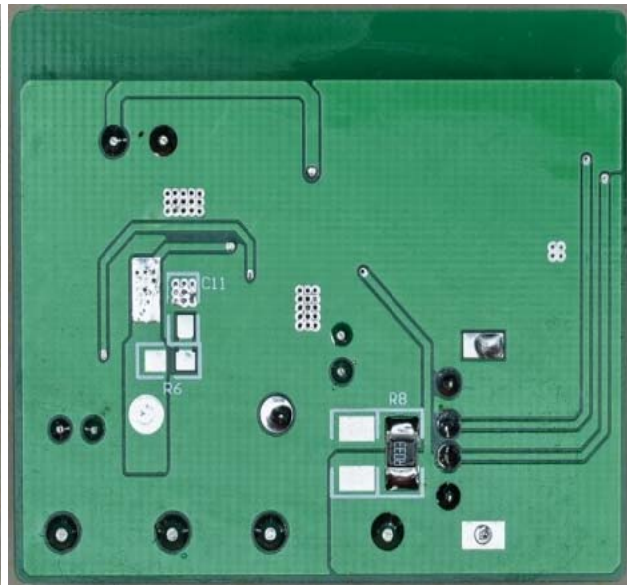
BOM :

Name	Qty	Value	Description	Manufacturer	Model Number
U1	1		Wide Input Range CC/CV Step Down Controller	AXELite Technology	AX3071UA
U2	1		Charger Interface Physical Layer IC	Power Integrations	CHY100
C1,C6	1	10uF	1206 Ceramic capacitor X7R 50V	TAYO YUDEN	UMK325AB7106KM-T
C2	1	100uF	Aluminum electrolytic capacitor, 35v	HERMEI	HTR101M1VE11
C3	1	220uF	Aluminum electrolytic capacitor, 16v	HERMEI	HTR221M1CE11
C4	1	100uF	Aluminum electrolytic capacitor, 50v	HERMEI	HTR101M1HF11
Q1	1		Dual N-ch MOSFET, 40v	AXELite Technology	AMBA4810
L1	1	33uH	DIP inductor	FUJIMI Technology	TL-14112501T01TA
R8	2	33mΩ	1812 SMD resistor		

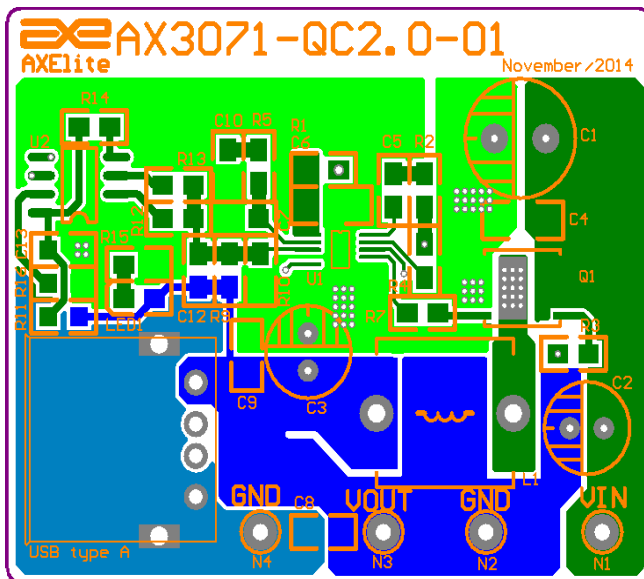
PCB Layout :



Top Layer

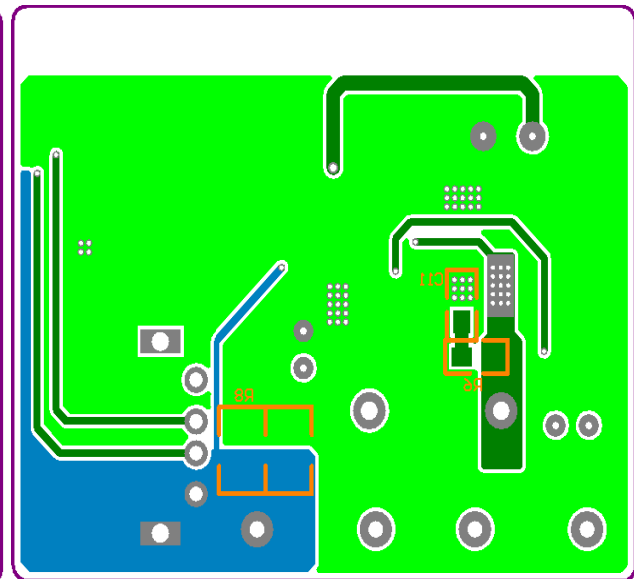


Bottom Layer



■ VIN GND ■ System GND ■ VOUT GND

Top Layer



■ VIN GND ■ System GND ■ VOUT GND

Bottom Layer (mirror)

1. PCB trace defined as LX node, which connects to source of switching MOSFET, drain of rectifying MOSFET and high-voltage side of the inductor, should be as short and wide as possible.
2. All sensitive analog traces such as SEN1, SEN2, COMP and FB should place away from high-voltage switching nodes such as LX, UG or LG nodes to avoid coupling.
3. C6 input bypass capacitor should be placed to the VIN pin as close as possible.
4. Connections from the drivers to the respective gate of the high-side or the low-side MOSFET should be as short as possible to reduce stray inductance.
5. Gather the ground terminals of the C1、C3、C4、C9, and the source of the Q1 MOSFETs as close as possible.

Typical Characteristics :

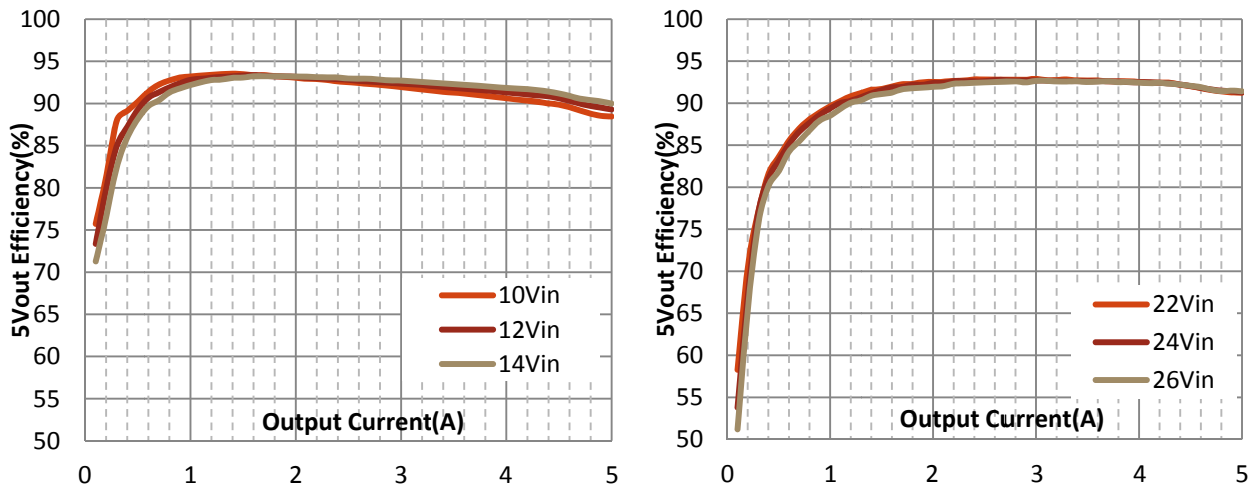


Fig.1 & Fig.2 efficiency vs output current, 5Vout

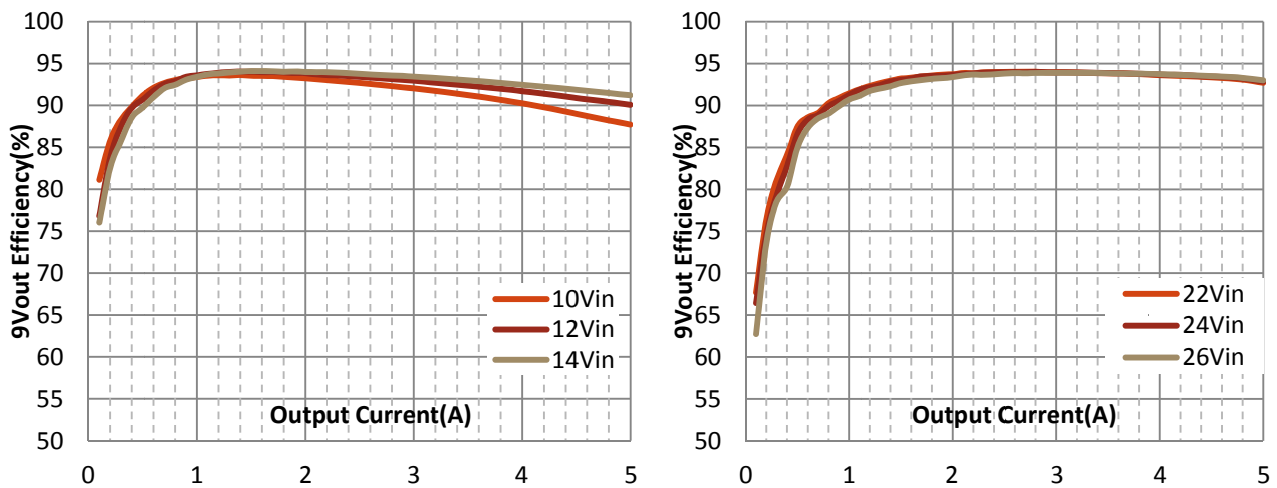


Fig.3 & Fig.4 efficiency vs output current, 9Vout

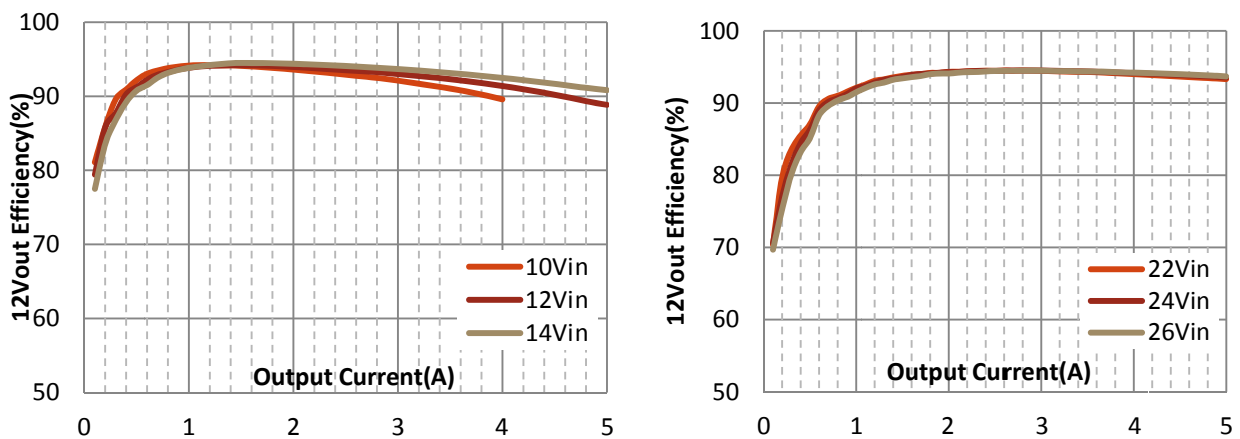


Fig.5 & Fig.6 efficiency vs output current, 12Vout

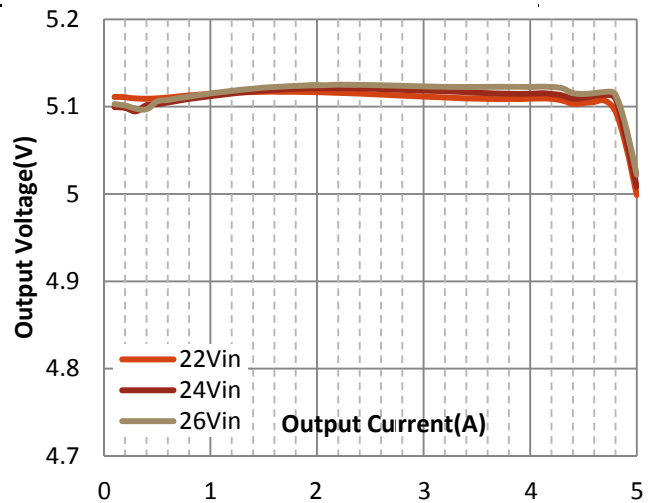
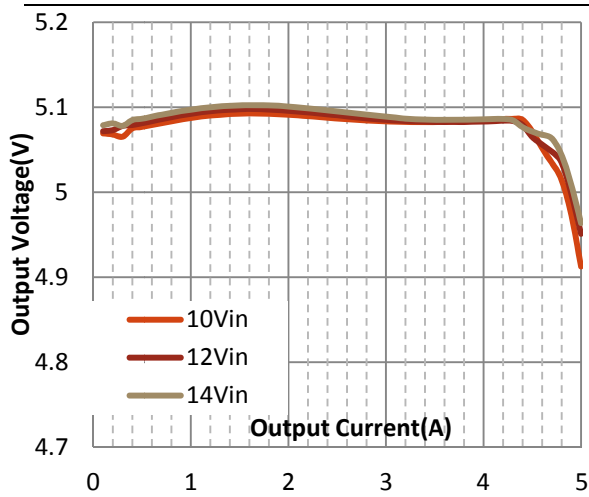


Fig.7 & Fig.8 output voltage vs output current, 5Vout

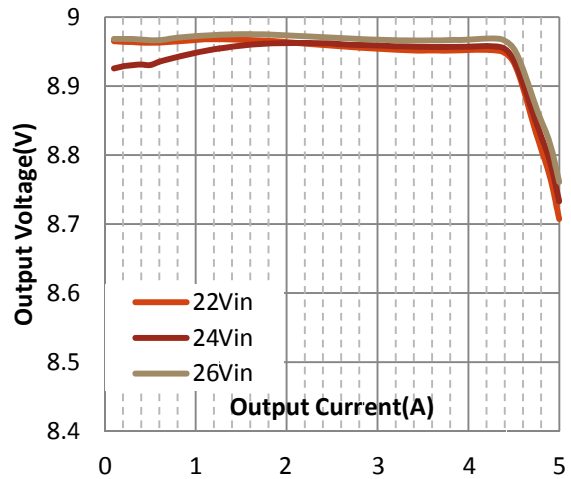
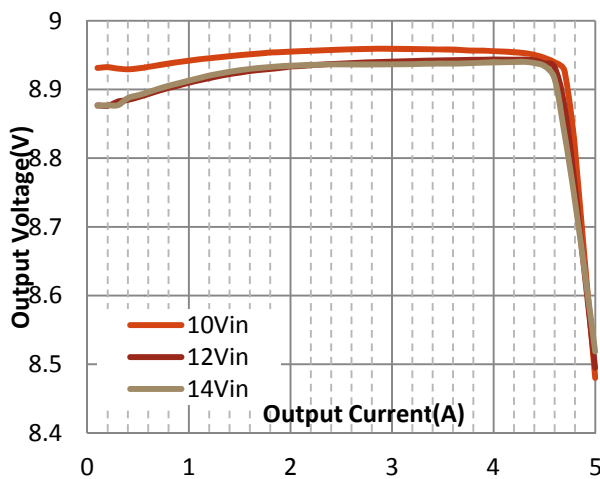


Fig.9 & Fig.10 output voltage vs output current, 9Vout

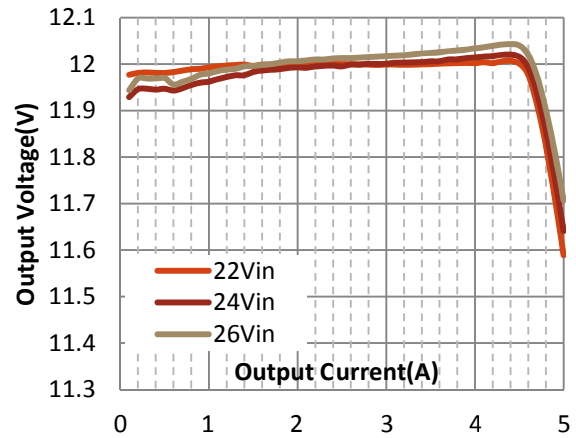
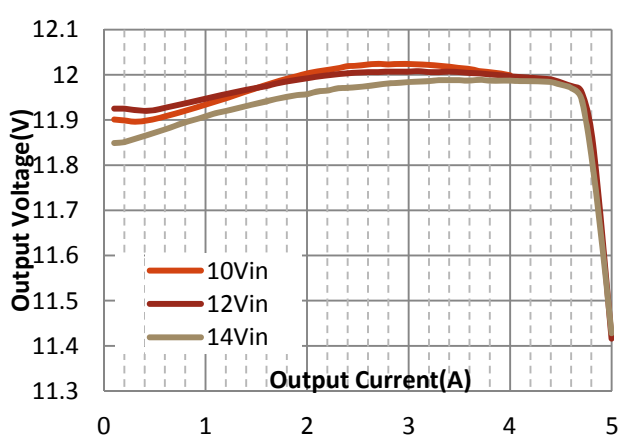


Fig.11 & Fig.12 output voltage vs output current, 12Vout

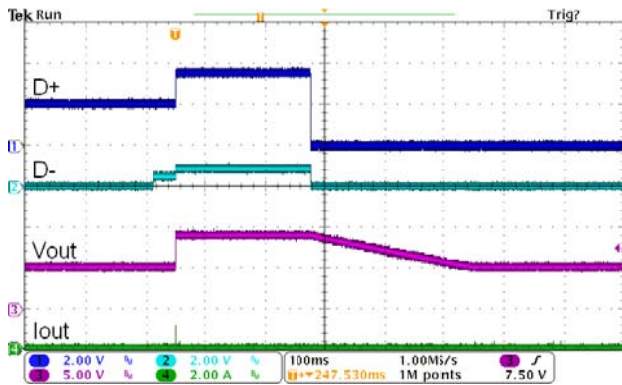


Fig.13 Vout 5v~9v changing test, no load

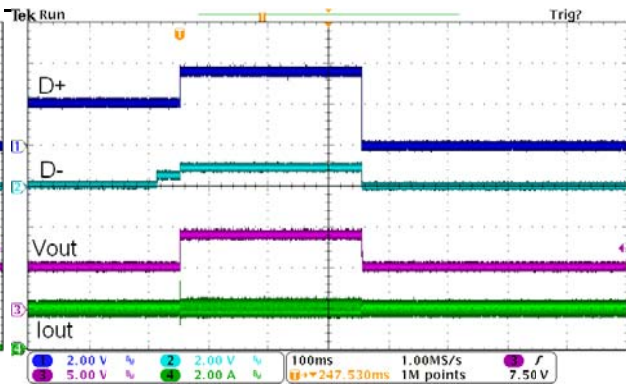


Fig.14 Vout 5v~9v changing test, 2A load

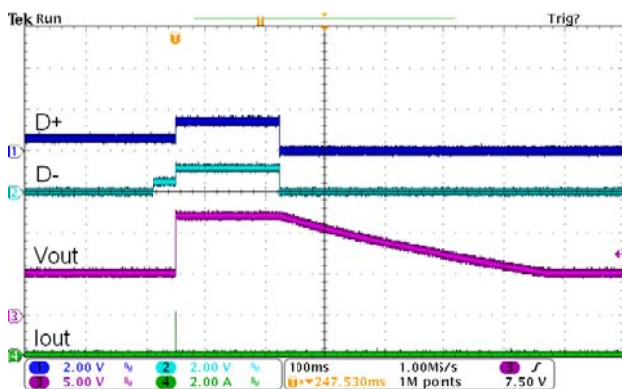


Fig.15 Vout 5v~12v changing test, no load

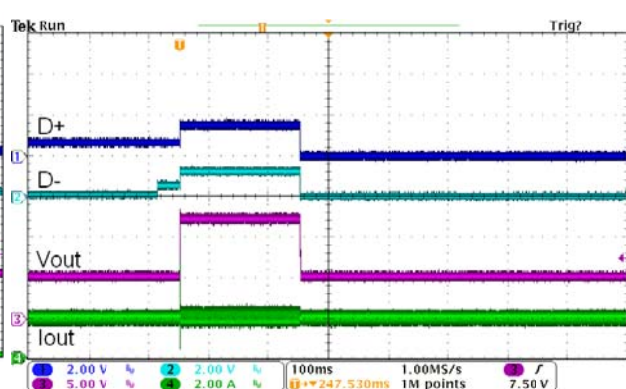


Fig.16 Vout 5v~12v changing test, 2A load

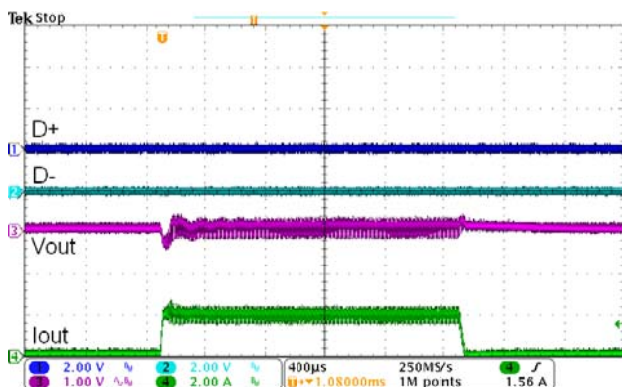


Fig.17 100mA~2A load transient, 12Vin to 5Vout

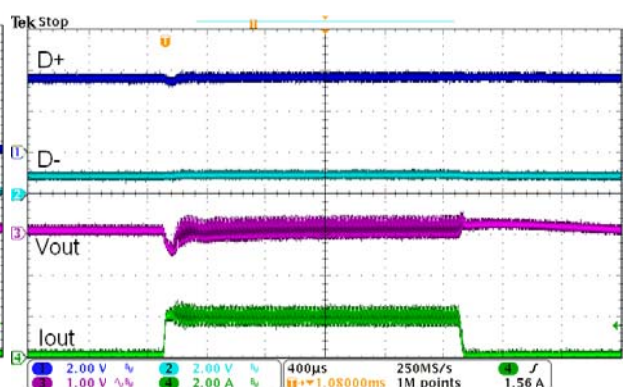


Fig.18 100mA~2A load transient, 12Vin to 9Vout

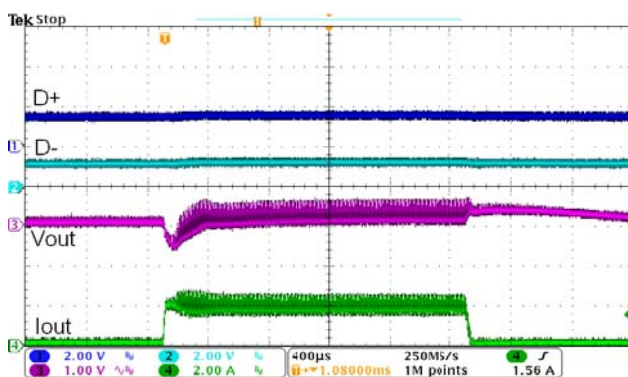
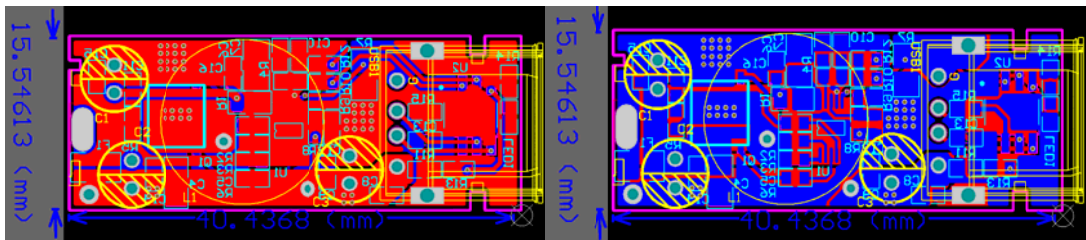
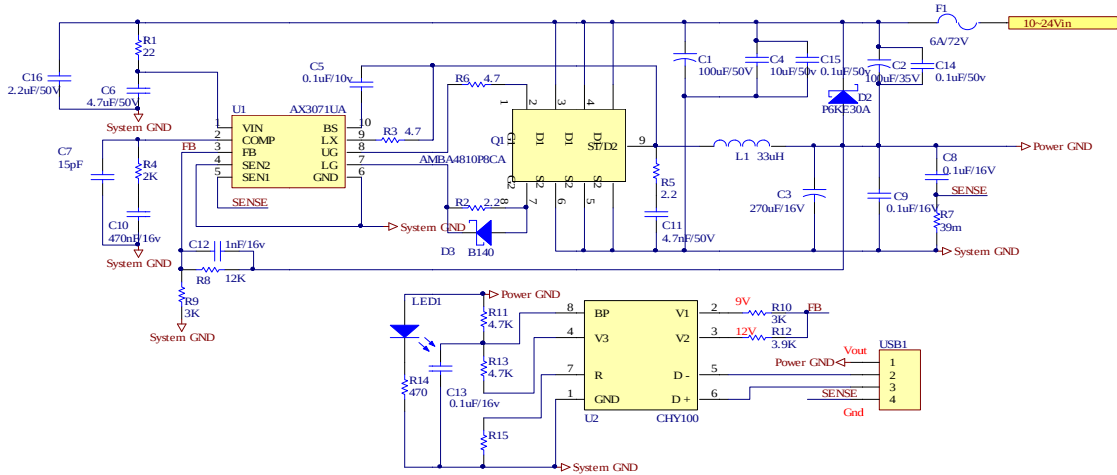


Fig.19 100mA~2A load transient, 12Vin to 12Vout

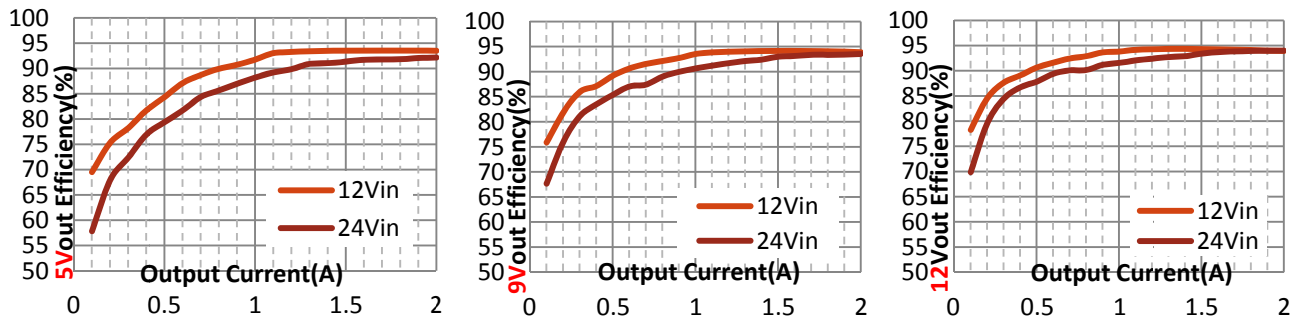
Use for Typical Car charger EVB : (Inverting mode)

$V_{in} = 10V \text{ to } 24V$; $V_{out}=5V/9V/12V$; $I_{out}=2A$; $OCP=2.3A$;

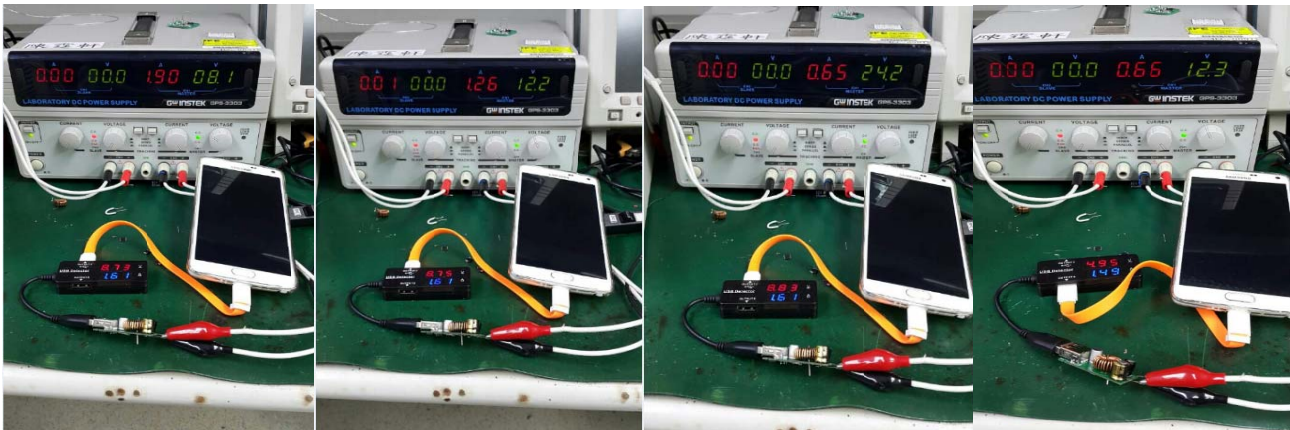
Circuit & PCB



Efficiency Tested:



Use Samsung Note4 to tested:



$V_{in}=8V$ $V_{out}=8.73V/1.61A$

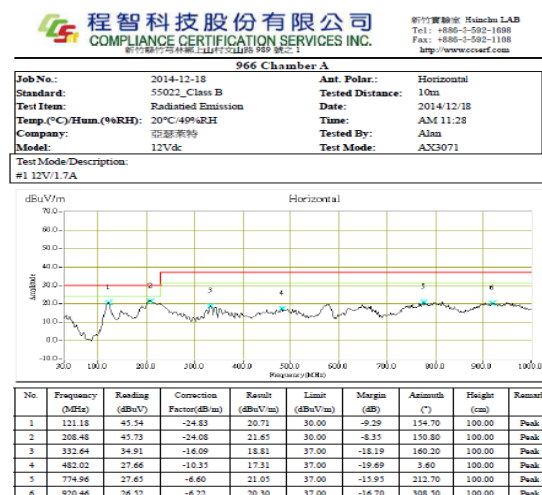
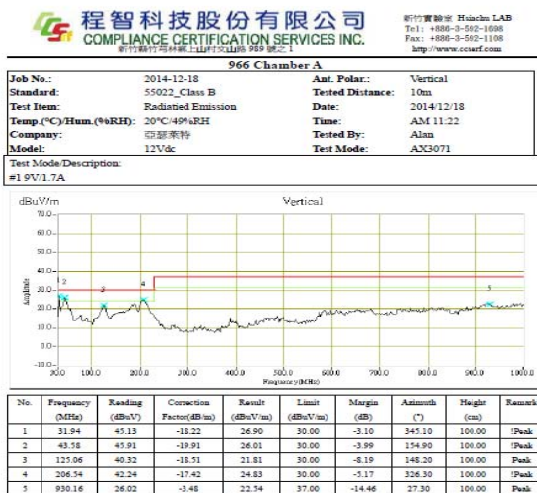
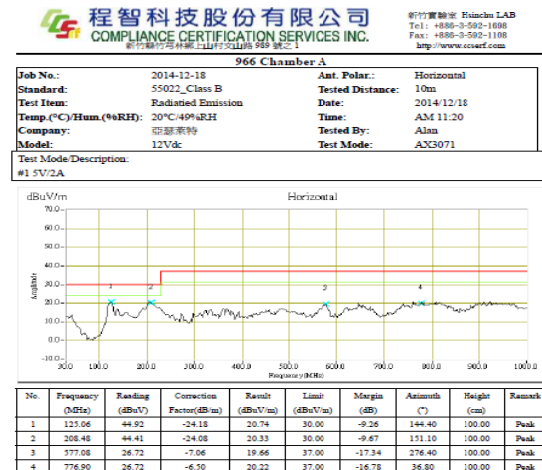
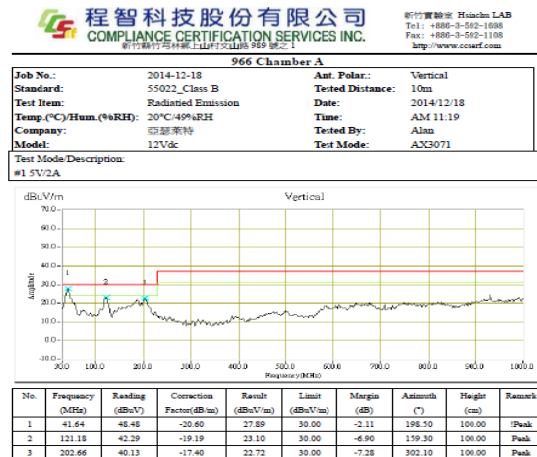
$V_{in}=12V$ $V_{out}=8.75V/1.61A$

$V_{in}=24V$ $V_{out}=8.83V/1.61A$

$V_{in}=12V$ $V_{out}=4.95V/1.49A$

EMI test report

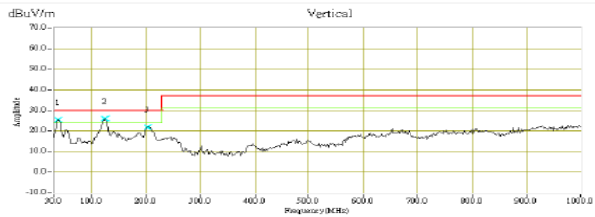
12Vin → 5V/9V/12Vout



24Vin → 5V/9V/12Vout

Job No.:	2014-12-18	Ant. Polar.:	Vertical
Standard:	55022_Class B	Tested Distance:	10m
Test Item:	Radiated Emission	Date:	2014/12/18
Temp.(°C)/Hum.(%RH):	20°C/49%RH	Time:	AM 11:31
Company:	亞基萊特	Tested By:	Alan
Model:	24Vdc	Test Mode:	AX3071

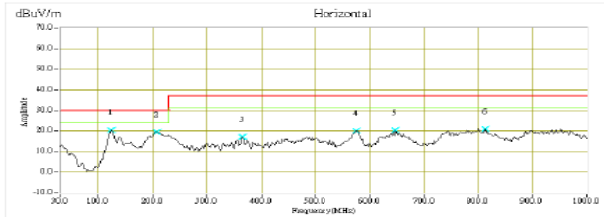
Test Mode/Description:
#1 5V/2A



No.	Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/us)	Result (dBuV/us)	Limit (dBuV/us)	Margin (dB)	Azimuth (°)	Height (cm)	Remark
1	37.76	44.47	-19.18	25.28	30.00	-4.72	178.40	100.00	Peak
2	123.12	46.82	-18.84	27.98	30.00	-2.02	175.70	100.00	Peak
3	202.66	39.23	-17.48	21.75	30.00	-8.25	259.20	100.00	Peak

Job No.:	2014-12-18	Ant. Polar.:	Horizontal
Standard:	55022_Class B	Tested Distance:	10m
Test Item:	Radiated Emission	Date:	2014/12/18
Temp.(°C)/Hum.(%RH):	20°C/49%RH	Time:	AM 11:32
Company:	亞基萊特	Tested By:	Alan
Model:	24Vdc	Test Mode:	AX3071

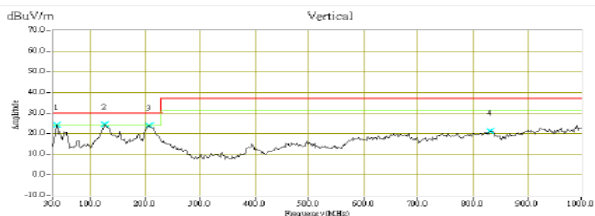
Test Mode/Description:
#1 5V/2A



No.	Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/us)	Result (dBuV/us)	Limit (dBuV/us)	Margin (dB)	Azimuth (°)	Height (cm)	Remark
1	123.12	45.03	-24.49	20.54	30.00	-9.46	171.40	100.00	Peak
2	206.54	43.59	-24.03	19.56	30.00	-10.44	188.80	100.00	Peak
3	365.62	33.47	-16.27	17.21	37.00	-19.79	174.90	100.00	Peak
4	775.14	27.24	-7.30	20.04	37.00	-16.96	204.80	100.00	Peak
5	644.98	28.47	-8.10	20.36	37.00	-16.64	207.70	100.00	Peak
6	813.76	27.41	-6.34	21.07	37.00	-15.93	169.00	100.00	Peak

Job No.:	2014-12-18	Ant. Polar.:	Vertical
Standard:	55022_Class B	Tested Distance:	10m
Test Item:	Radiated Emission	Date:	2014/12/18
Temp.(°C)/Hum.(%RH):	20°C/49%RH	Time:	AM 11:35
Company:	亞基萊特	Tested By:	Alan
Model:	24Vdc	Test Mode:	AX3071

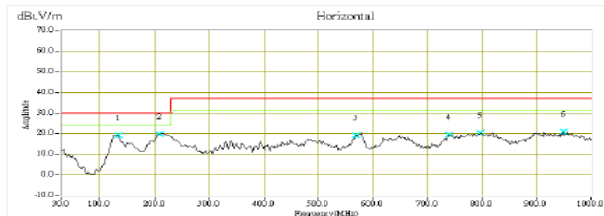
Test Mode/Description:
#1 9V/1.8A



No.	Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/us)	Result (dBuV/us)	Limit (dBuV/us)	Margin (dB)	Azimuth (°)	Height (cm)	Remark
1	37.76	43.44	-19.18	24.26	30.00	-5.74	105.20	100.00	Peak
2	123.12	42.89	-18.51	24.38	30.00	-5.62	159.10	100.00	Peak
3	206.54	41.46	-17.42	24.03	30.00	-5.97	275.10	100.00	Peak
4	831.22	27.36	-5.93	21.42	37.00	-15.58	167.20	100.00	Peak

Job No.:	2014-12-18	Ant. Polar.:	Horizontal
Standard:	55022_Class B	Tested Distance:	10m
Test Item:	Radiated Emission	Date:	2014/12/18
Temp.(°C)/Hum.(%RH):	20°C/49%RH	Time:	AM 11:36
Company:	亞基萊特	Tested By:	Alan
Model:	24Vdc	Test Mode:	AX3071

Test Mode/Description:
#1 9V/1.8A



No.	Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/us)	Result (dBuV/us)	Limit (dBuV/us)	Margin (dB)	Azimuth (°)	Height (cm)	Remark
1	132.82	43.26	-24.14	19.12	30.00	-10.88	151.00	100.00	Peak
2	206.46	43.98	-24.08	19.90	30.00	-10.10	184.60	100.00	Peak
3	569.32	27.12	-7.83	19.29	37.00	-17.71	212.70	100.00	Peak
4	738.10	26.81	-7.32	19.49	37.00	-17.51	160.00	100.00	Peak
5	798.24	26.36	-6.00	20.37	37.00	-16.63	262.60	100.00	Peak
6	849.56	26.53	-5.58	20.95	37.00	-16.05	86.80	100.00	Peak

Job No.:	2014-12-18	Ant. Polar.:	Vertical
Standard:	55022_Class B	Tested Distance:	10m
Test Item:	Radiated Emission	Date:	2014/12/18
Temp.(°C)/Hum.(%RH):	20°C/49%RH	Time:	AM 11:39
Company:	亞基萊特	Tested By:	Alan
Model:	24Vdc	Test Mode:	AX3071

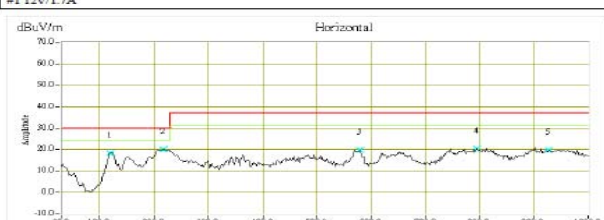
Test Mode/Description:
#1 12V/1.7A



No.	Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/us)	Result (dBuV/us)	Limit (dBuV/us)	Margin (dB)	Azimuth (°)	Height (cm)	Remark
1	37.76	43.52	-19.18	24.34	30.00	-5.66	189.00	100.00	Peak
2	119.24	44.12	-19.68	24.44	30.00	-5.56	144.50	100.00	Peak
3	206.54	39.19	-17.42	21.77	30.00	-8.23	241.30	100.00	Peak
4	683.78	27.95	-7.56	20.38	37.00	-16.62	109.50	100.00	Peak
5	930.16	26.19	-3.48	22.70	37.00	-14.30	125.80	100.00	Peak

Job No.:	2014-12-18	Ant. Polar.:	Horizontal
Standard:	55022_Class B	Tested Distance:	10m
Test Item:	Radiated Emission	Date:	2014/12/18
Temp.(°C)/Hum.(%RH):	20°C/49%RH	Time:	AM 11:38
Company:	亞基萊特	Tested By:	Alan
Model:	24Vdc	Test Mode:	AX3071

Test Mode/Description:
#1 12V/1.7A



No.	Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/us)	Result (dBuV/us)	Limit (dBuV/us)	Margin (dB)	Azimuth (°)	Height (cm)	Remark
1	119.24	43.67	-21.24	18.42	30.00	-11.58	141.00	100.00	Peak
2	216.24	44.16	-24.07	20.09	30.00	-9.91	151.30	100.00	Peak
3	579.02	26.85	-6.92	19.93	37.00	-17.07	360.00	100.00	Peak
4	796.30	26.50	-6.18	20.32	37.00	-16.68	231.80	100.00	Peak
5	928.22	26.07	-6.15	19.92	37.00	-17.08	217.60	100.00	Peak