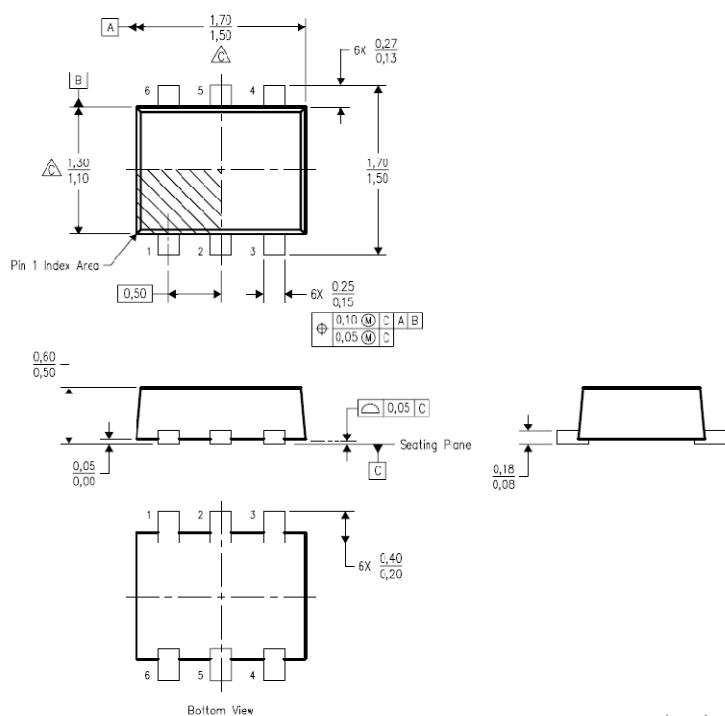


Comparison of Main source and 2nd source

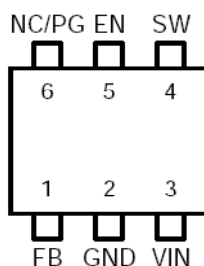
Test Report

Hardware version	FW version	Main source P/N	2 ND source MFG	2 ND source P/N
V025	4.9.113 #1MonFeb 1122:40:43 CST 2019	TLV62569DRLR	DIODES	AP61302Z6-7

Main Source(TLV62569DRLR) spec:

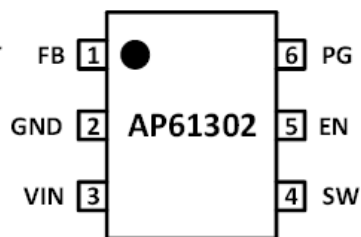
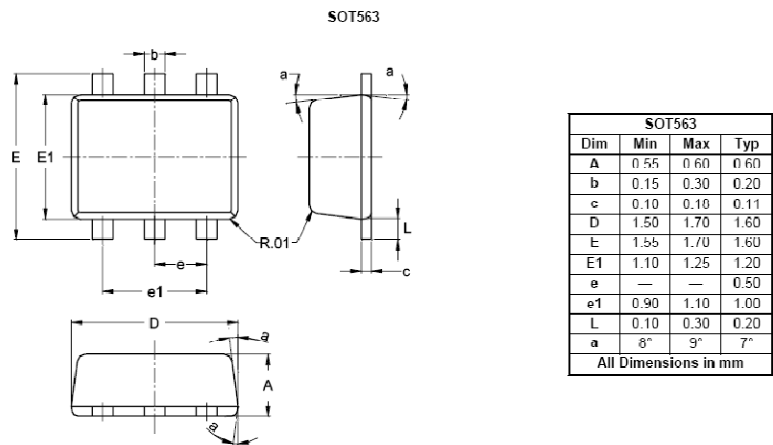


SOT563-6
DRL Package
(Top View)



I_{OUT}	Output current	0	2	A
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2nd Source(AP61302Z6-7) spec:



- 3A Continuous Output Current

TLV62569DRLR 2nd source introduce AP61302Z6-7

Test Item:

If want to introduce 2nd source, still need to test the following items:

- a. Voltage accuracy(Vin)
- b. Voltage accuracy(Vout)
- c. AC ripple
- d. Power Efficiency
- e. Power on sequence
- f. Short test
- g. Power Consumption
- h. EMI test

1. Power Test Setup(for test item a,b,c)

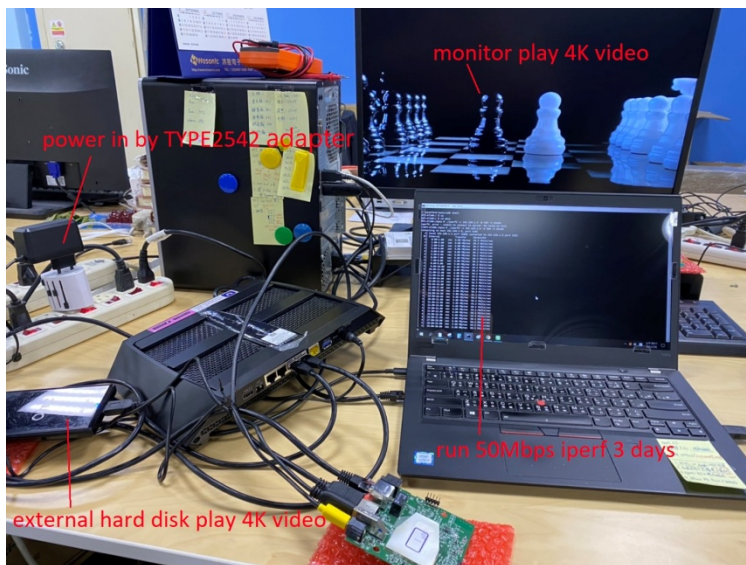
The measure test point is

VDDCPU: capacitor C301(Vin)and capacitor C304(VDDCPU)

VDD_EE:capacitor C302(Vin)and capacitor C305(VDD_EE)

P1V2:capacitor C318(Vin)and capacitor C325(P1V2)

P3V3: capacitor C319(Vin)and capacitor C327(P3V3)



1.1 Test Condition

- BOX play 4K video by using external hard disk.
- Ethernet is connected to AP WIFI and run iperf base on 50Mbps to server.
- HDMI output port connects to TV through the HDMI cable.
- DC Power cable is also connected.
- The temperature is about 25 degrees. The results are meeting +/-5%.

a. Vin:

Measure C301(U301_Vin), C302(U302_Vin),C318 (U304_Vin) and C319(U305_Vin).

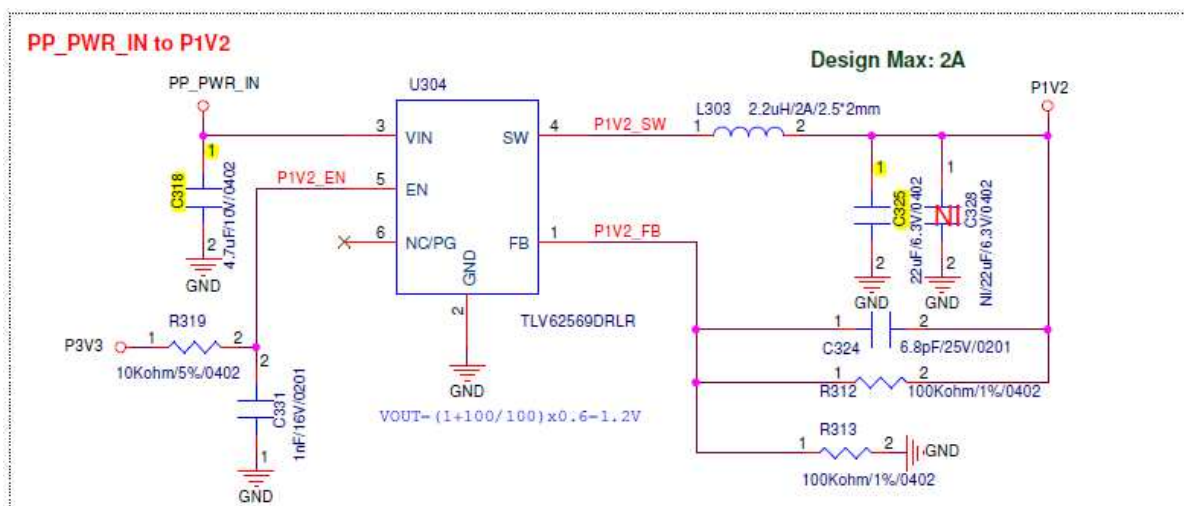
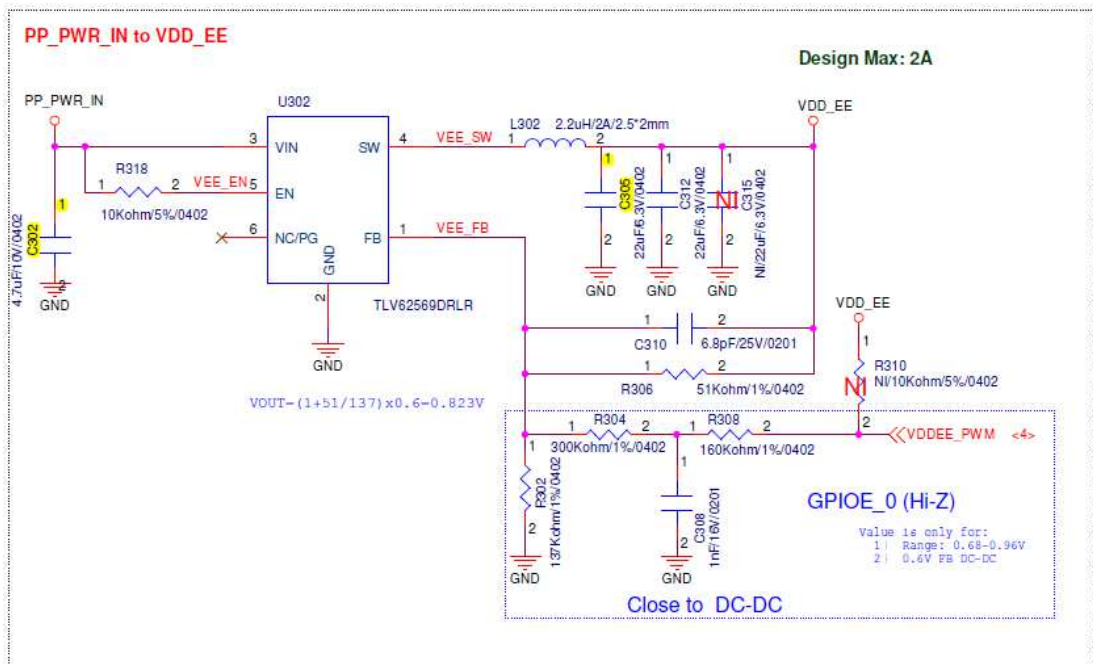
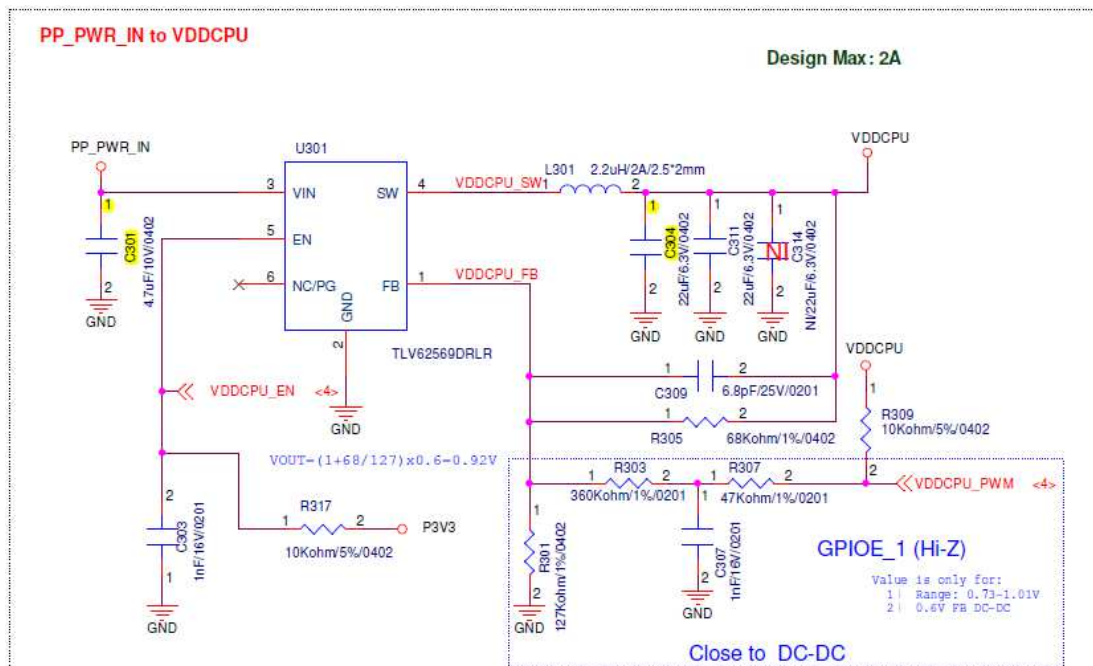
b. Vout:

Measure C304 (VDDCPU), C305(VDD_EE),C325(P1V2)and C327 (P3V3).

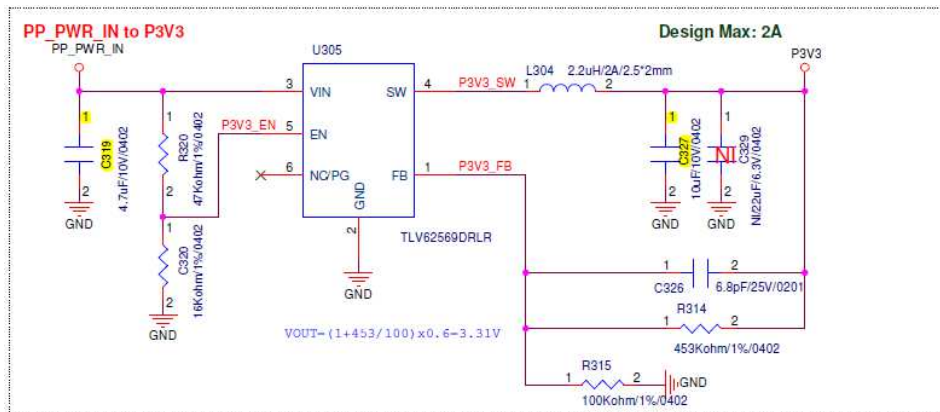
c. Ripple test:

Setting Oscilloscope parameter to AC, and measure C304, C305, C325 and C327 to check ripple is

TLV62569DRLR 2nd source introduce AP61302Z6-7
under specification (+5%)



TLV62569DRLR 2nd source introduce AP61302Z6-7



2. Result and Picture

Power Rail	Power IC	Spec	Measurement point	Result	Picture	Result Pass/Fail
TLV62569DRLR_VDDCPU_VinVout	TLV62569DRLR	4.75V-5.25V	C301 pin1	5.04V	Fig. 1	Pass
TLV62569DRLR_VDDCPU_ripple		0.73V-1.01V	C304 pin1	0.88V		
TLV62569DRLR_VDDEE_VinVout		<40mV	C304	28.8mV	Fig. 2	Pass
TLV62569DRLR_VDDEE_ripple		4.75V-5.25V	C302 pin1	4.96V	Fig. 3	Pass
TLV62569DRLR_P1V2_Vin Vout		0.68V-0.96V	C305 pin1	0.84V		
TLV62569DRLR_P1V2_ripple		<40mV	C306	39.6mV	Fig. 4	Pass
TLV62569DRLR_P3V3_Vin Vout		4.75V-5.25V	C318 pin1	5.04V	Fig. 5	Pass
TLV62569DRLR_P3V3_ripple		1.14V-1.26V	C325 pin1	1.2V		
TLV62569DRLR_P3V3_ripple		<60mV	C325	40.4mV	Fig. 6	Pass
TLV62569DRLR_P3V3_Vin Vout		4.75V-5.25V	C319 pin1	5.04V	Fig. 7	Pass
TLV62569DRLR_P3V3_ripple		3.135-3.465V	C327 pin1	3.32V		
TLV62569DRLR_P3V3_ripple		<165mV	C327	39.2mV	Fig. 8	Pass

Power Rail	Power IC	Spec	Measurement point	Result	Picture	Result Pass/Fail
AP61302Z6-7_VDDCPU_VinVout	AP61302Z6-7	4.75V-5.25V	C301 pin1	4.893V	Fig. 9	Pass
AP61302Z6-7_VDDCPU_ripple		0.73V-1.01V	C304 pin1	0.866V		
AP61302Z6-7_VDDEE_VinVout		<40mV	C304	23mV	Fig. 10	Pass
AP61302Z6-7_VDDEE_ripple		4.75V-5.25V	C302 pin1	4.944V	Fig. 11	Pass
AP61302Z6-7_P1V2_Vin Vout		0.68V-0.96V	C305 pin1	0.841V		
AP61302Z6-7_P1V2_ripple		<40mV	C306	17.67mV	Fig. 12	Pass
AP61302Z6-7_P3V3_Vin Vout		4.75V-5.25V	C318 pin1	4.899V	Fig. 13	Pass
AP61302Z6-7_P3V3_ripple		1.14V-1.26V	C325 pin1	1.197V		
AP61302Z6-7_P3V3_ripple		<60mV	C325	24.51mV	Fig. 14	Pass
AP61302Z6-7_P3V3_Vin Vout		4.75V-5.25V	C319 pin1	4.952V	Fig. 15	Pass
AP61302Z6-7_P3V3_ripple		3.135-3.465V	C327 pin1	3.252V		
AP61302Z6-7_P3V3_ripple		<165mV	C327	28.93mV	Fig. 16	Pass

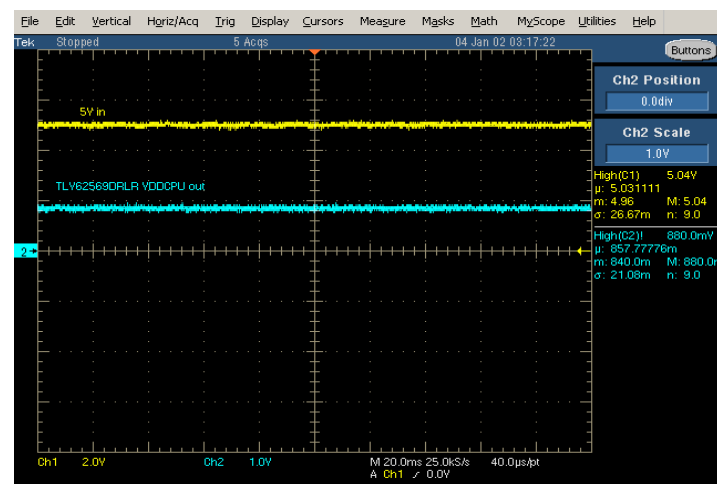


Fig 1: TLV62569DRLR_VDDCPU_VinVout

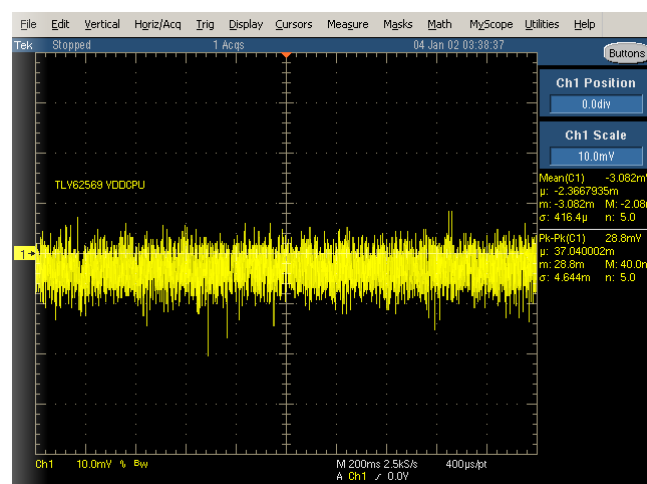


Fig 2: TLV62569DRLR_VDDCPU_ripple

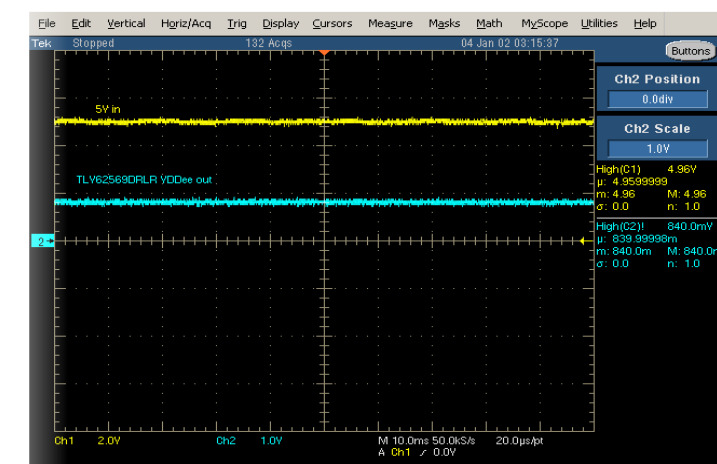


Fig3: TLV62569DRLR_VDDEE_VinVout



Fig4 : TLV62569DRLR_VDDEE_ripple

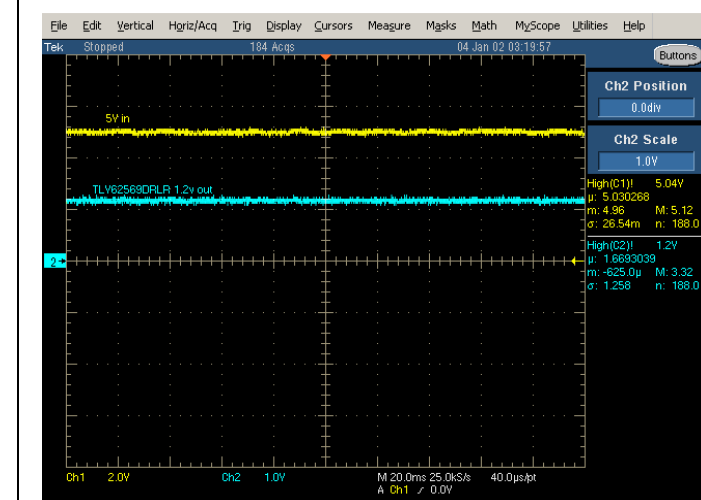


Fig5: TLV62569DRLR_P1V2_Vin Vout

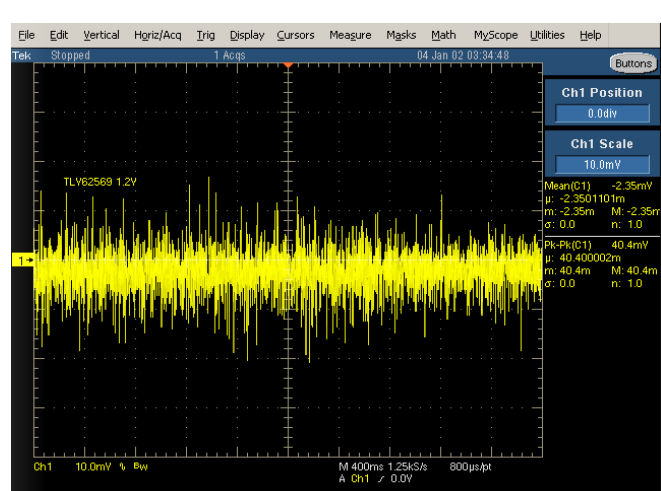


Fig6: TLV62569DRLR_P1V2_ripple

TLV62569DRLR 2nd source introduce AP61302Z6-7

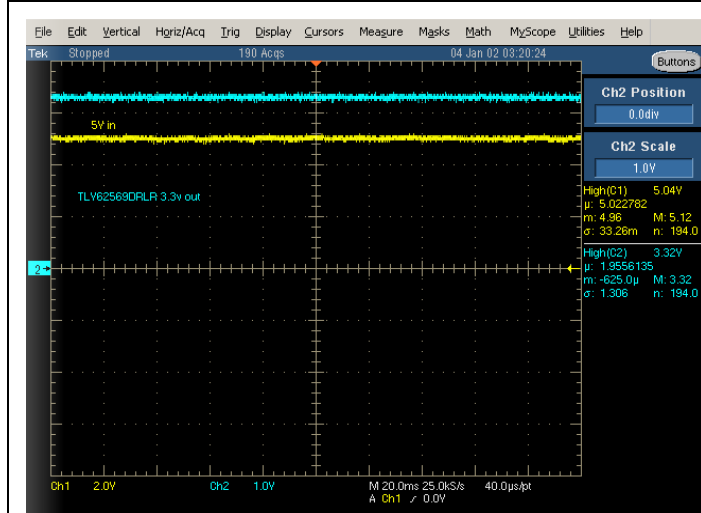


Fig7: TLV62569DRLR _P3V3_Vin Vout

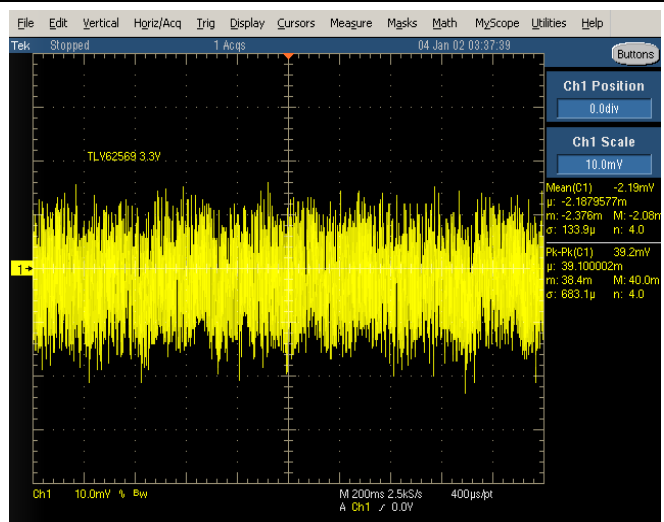


Fig8: TLV62569DRLR _P3V3_ripple

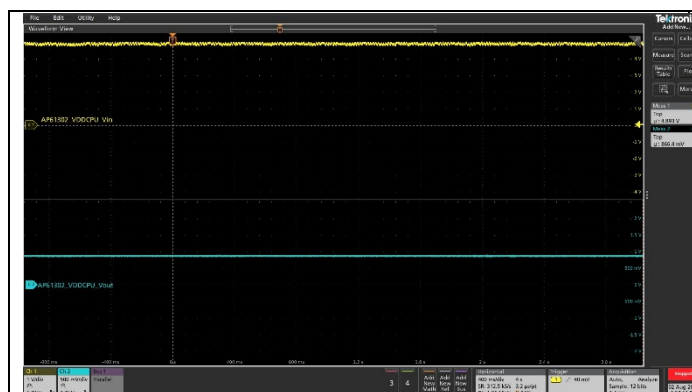


Fig. 9: AP61302Z6-7 _VDDCPU_VinVout

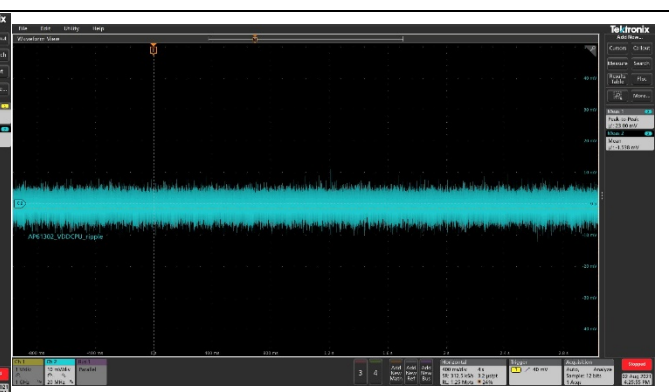


Fig. 10: AP61302Z6-7 _VDDCPU_ripple

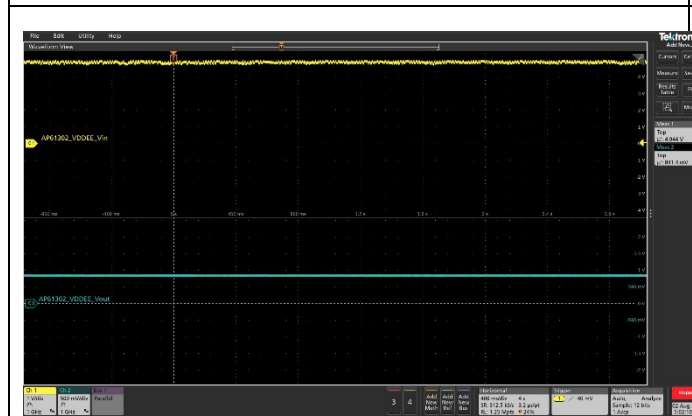


Fig. 11: AP61302Z6-7 _VDDEE_VinVout

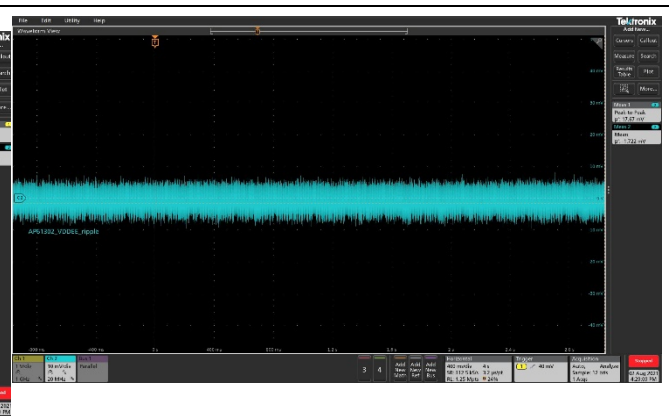


Fig. 12: AP61302Z6-7 _VDDEE_ripple

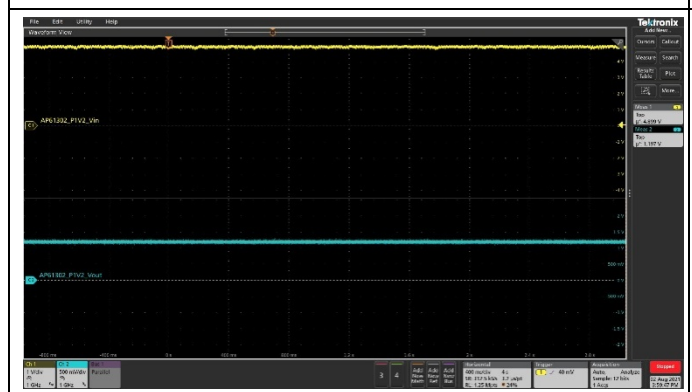


Fig. 13: AP61302Z6-7 _P1V2_Vin Vout

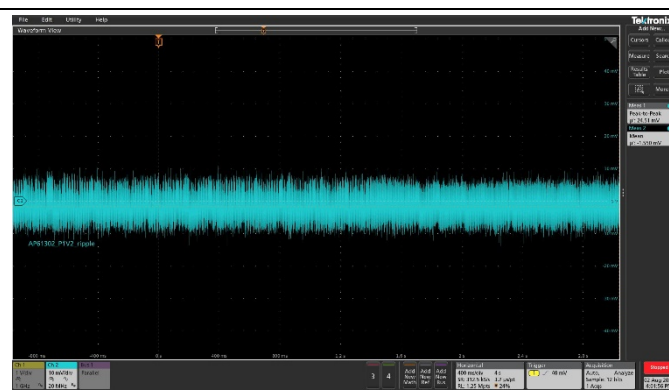


Fig. 14: AP61302Z6-7 _P1V2_ripple

TLV62569DRLR 2nd source introduce AP61302Z6-7

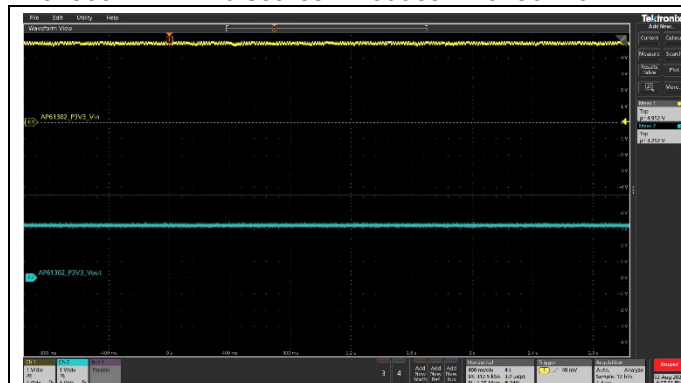


Fig.15: AP61202Z6-7 _P3V3_Vin Vout

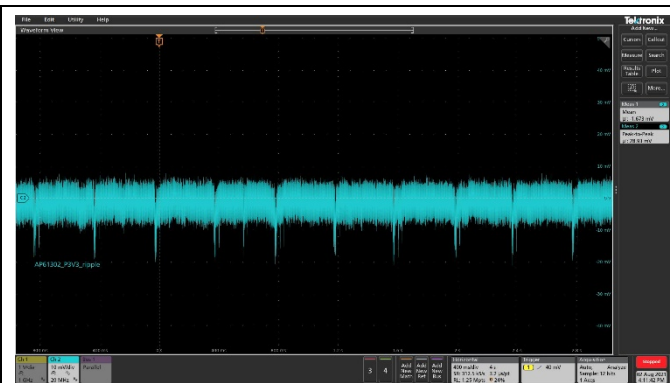
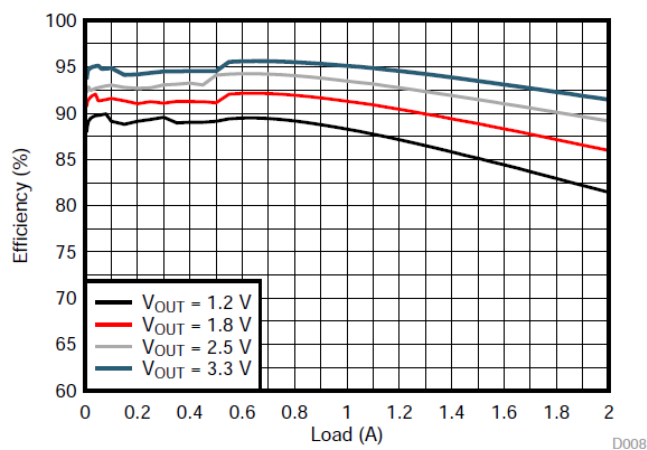


Fig. 16: AP61202Z6-7 _P3V3_ripple

3. Power Efficiency

Main source TLV62569DRLR datasheet:

Efficiency at 5-V Input Voltage



2nd source AP61302Z6-7 datasheet:

Typical Performance Characteristics (AP61300/AP61302 @ $T_A = +25^\circ\text{C}$, $V_{IN} = 5\text{V}$, $V_{OUT} = 1.8\text{V}$, BOM = Table 1, PFM, unless otherwise specified.)

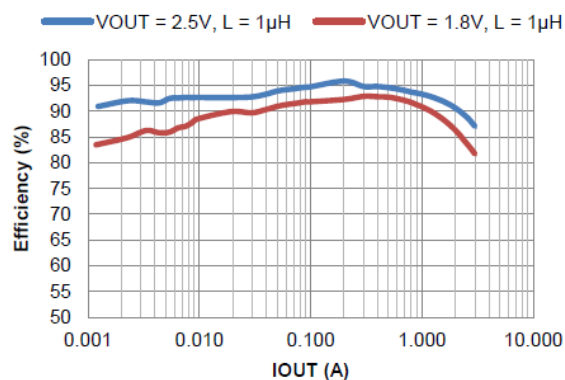


Figure 10. Efficiency vs. Output Current, $V_{IN} = 3.3\text{V}$

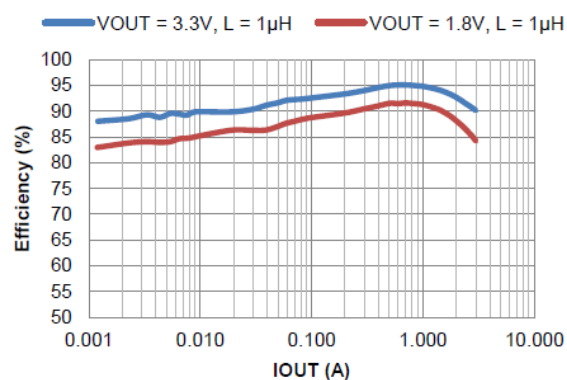


Figure 11. Efficiency vs. Output Current, $V_{IN} = 5\text{V}$

TLV62569DRLR 2nd source introduce AP61302Z6-7

3-1. Power Efficiency test result:

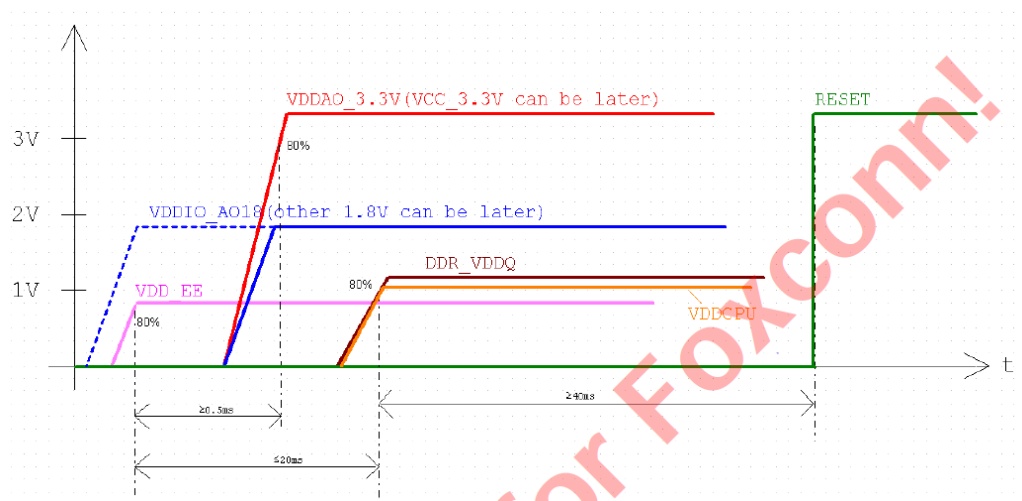
Specification:	Vin		5V		L		2.2uH		Cp		6.8pF								
	Cin		4.7uF		Cout		10uF_3.3V / 22uF_1.2V / 44uF_0.823V / 44uF_0.92V		Note		All component from system board								
TLV62569 (U301/0.92V)					TLV62569 (U302/0.823V)					TLV62569 (U304/1.2V)					TLV62569 (U305/3.31V)				
Vin	Vout	Iin	Iout	Eff.	Vin	Vout	Iin	Iout	Eff.	Vin	Vout	Iin	Iout	Eff.	Vin	Vout	Iin	Iout	Eff.
5.09	0.92	0.0114	0.05	79.27%	5.09	0.819	0.0103	0.05	78.11%	5.089	1.202	0.0146	0.05	80.89%	5.087	3.348	0.0382	0.05	86.17%
5.089	0.92	0.0210	0.1	86.09%	5.089	0.819	0.0189	0.1	85.15%	5.087	1.203	0.0269	0.1	87.91%	5.083	3.341	0.0698	0.1	94.17%
5.086	0.919	0.0431	0.2	83.85%	5.087	0.817	0.0388	0.2	82.79%	5.082	1.201	0.0552	0.2	85.62%	5.073	3.315	0.1422	0.2	91.91%
5.084	0.917	0.0617	0.3	87.70%	5.085	0.815	0.0552	0.3	87.11%	5.079	1.195	0.0787	0.3	89.69%	5.065	3.311	0.2035	0.3	96.37%
5.081	0.916	0.0833	0.4	86.57%	5.082	0.814	0.0750	0.4	85.43%	5.074	1.195	0.1061	0.4	88.79%	5.056	3.31	0.2747	0.4	95.33%
5.076	0.915	0.1251	0.6	86.46%	5.077	0.813	0.1129	0.6	85.10%	5.065	1.194	0.1590	0.6	88.96%	5.037	3.309	0.4112	0.6	95.86%
5.071	0.914	0.1733	0.8	83.20%	5.072	0.813	0.1569	0.8	81.73%	5.055	1.193	0.2194	0.8	86.05%	5.017	3.308	0.5628	0.8	93.73%
5.065	0.913	0.2212	1	81.49%	5.067	0.812	0.2008	1	79.81%	5.046	1.192	0.2789	1	84.70%	4.998	3.308	0.7082	1	93.46%
5.06	0.913	0.2723	1.2	79.52%	5.061	0.811	0.2479	1.2	77.57%	5.035	1.191	0.3416	1.2	83.10%	4.979	3.307	0.8587	1.2	92.82%
5.05	0.912	0.3585	1.5	75.56%	5.052	0.811	0.3273	1.5	73.57%	5.018	1.19	0.4459	1.5	79.78%	4.94	3.27	1.1645	1.5	85.27%
Average %				82.97%	Average %				81.64%	Average %				85.55%	Average %				92.51%
AP61302Z6-7 (U301/0.92V)					AP61302Z6-7 (U302/0.823V)					AP61302Z6-7 (U304/1.2V)					AP61302Z6-7 (U305/3.31V)				
Vin	Vout	Iin	Iout	Eff.	Vin	Vout	Iin	Iout	Eff.	Vin	Vout	Iin	Iout	Eff.	Vin	Vout	Iin	Iout	Eff.
5.07	0.929	0.0125	0.05	73.29%	5.07	0.825	0.0114	0.05	71.37%	5.07	1.217	0.0158	0.05	75.96%	5.066	3.373	0.0384	0.05	86.69%
5.069	0.931	0.0224	0.1	81.99%	5.069	0.828	0.0202	0.1	80.86%	5.068	1.215	0.0284	0.1	84.42%	5.061	3.369	0.0705	0.1	94.42%
5.066	0.928	0.0448	0.2	81.78%	5.067	0.826	0.0406	0.2	80.30%	5.064	1.208	0.0571	0.2	83.55%	5.049	3.321	0.1434	0.2	91.74%
5.064	0.926	0.0641	0.3	85.58%	5.065	0.822	0.0579	0.3	84.09%	5.06	1.206	0.0825	0.3	86.67%	5.038	3.288	0.2039	0.3	96.02%
5.062	0.922	0.0853	0.4	85.41%	5.063	0.819	0.0765	0.4	84.58%	5.057	1.199	0.1090	0.4	87.01%	5.026	3.287	0.2785	0.4	93.93%
5.057	0.921	0.1301	0.6	83.99%	5.059	0.818	0.1169	0.6	82.99%	5.049	1.197	0.1659	0.6	85.74%	5.003	3.275	0.4154	0.6	94.55%
5.052	0.92	0.1818	0.8	80.13%	5.053	0.817	0.1638	0.8	78.97%	5.04	1.195	0.2296	0.8	82.61%	4.977	3.27	0.5675	0.8	92.62%
5.046	0.92	0.2316	1	78.72%	5.048	0.816	0.2104	1	76.83%	5.032	1.194	0.2902	1	81.76%	4.953	3.264	0.7129	1	92.44%
5.041	0.919	0.2835	1.2	77.17%	5.043	0.815	0.2587	1.2	74.96%	5.023	1.194	0.3533	1.2	80.74%	4.928	3.257	0.8621	1.2	92.00%
5.031	0.917	0.3699	1.5	73.91%	5.034	0.814	0.3386	1.5	71.63%	5.009	1.192	0.4575	1.5	78.02%	4.891	3.246	1.1006	1.5	90.45%
Average %				80.20%	Average %				78.66%	Average %				82.65%	Average %				92.45%

The test result of AP61302Z6-7 is similar with main source TLV62569DRLR

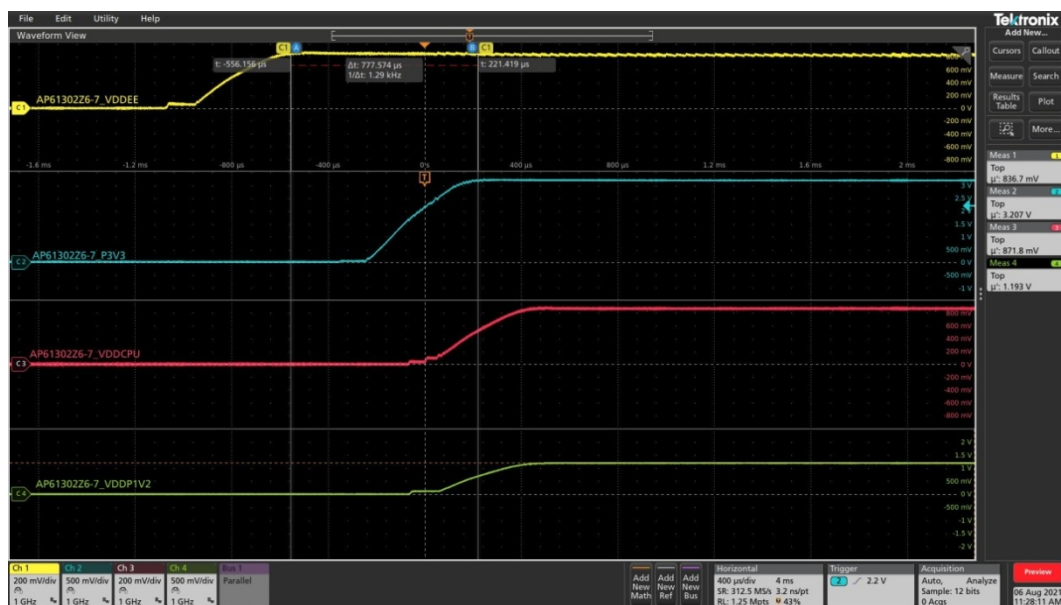
TLV62569DRLR 2nd source introduce AP61302Z6-7

4. Power on sequence

Amlogic S905X2 datasheet:



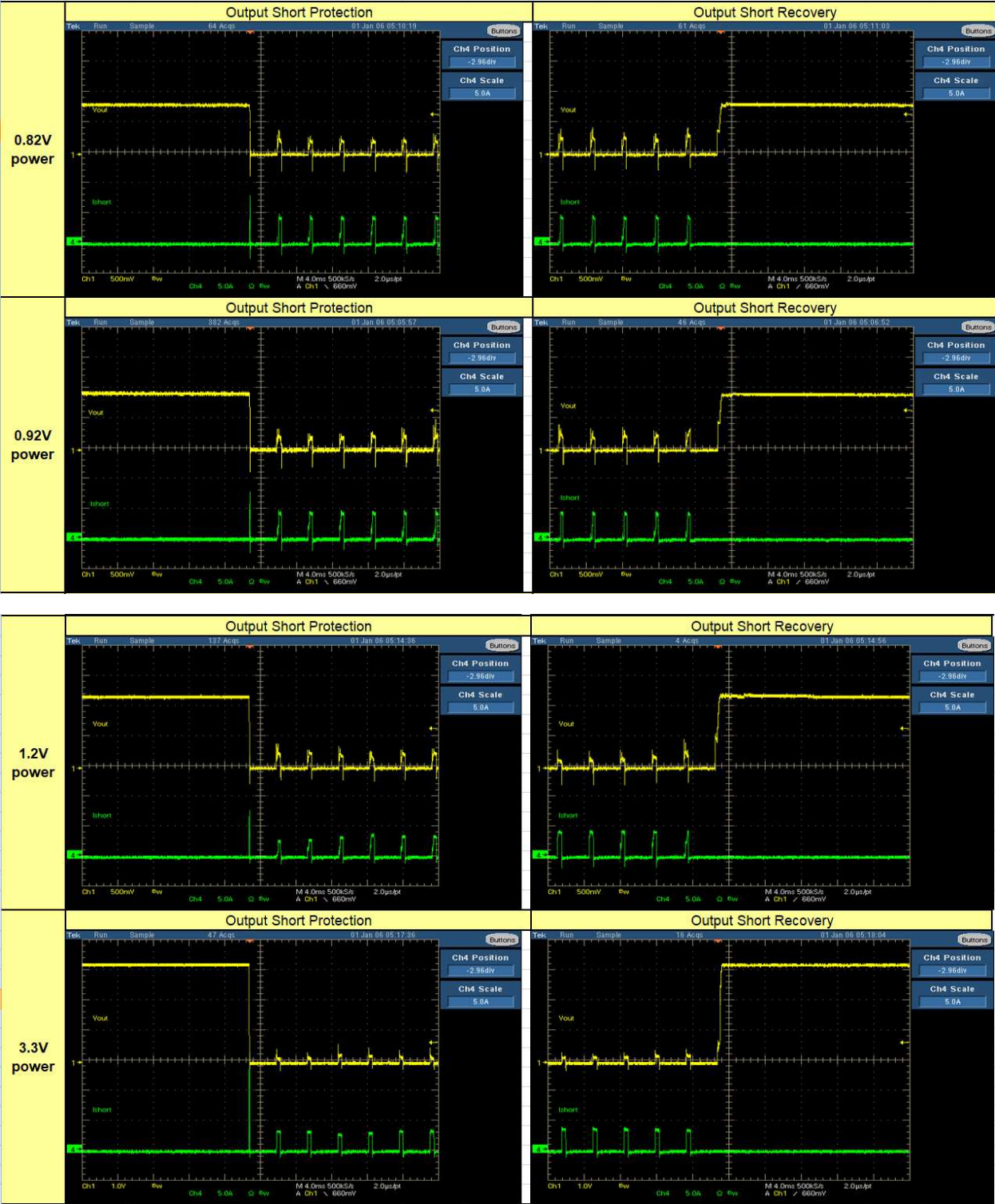
4-1. Power on sequence test result:



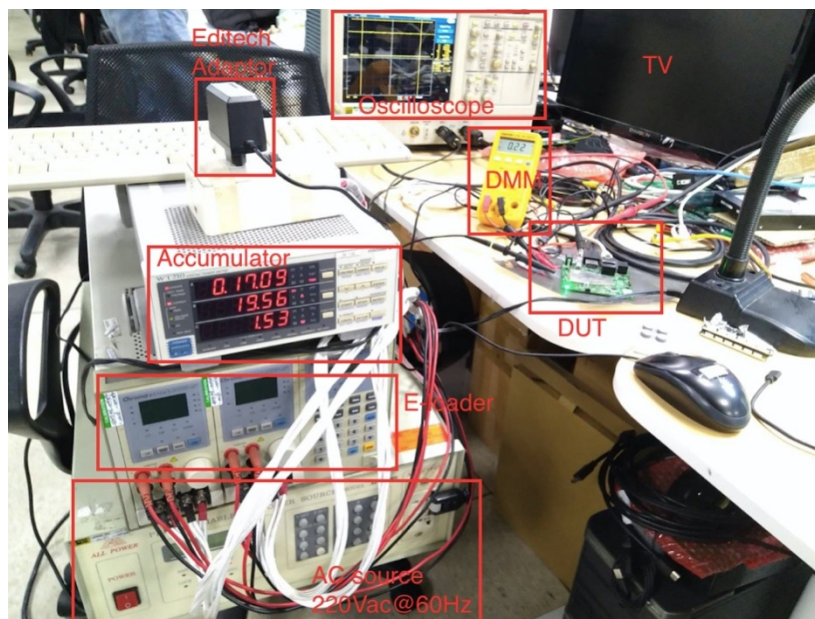
Power on sequence : VDDEE -> VCC_3.3V -> VDDCPU and VCC1.2V

5. Short test

Specification:	IC	AP61302Z6-7	Vin	5V	L	2.2uH	Cp	6.8pF	Conclusion:	Pass (function normal)
			Cin	4.7uF	Cout	10uF_3.3V / 22uF_1.2V / 44uF_0.823V / 44uF_0.92V	Note	All component from system board		



6. Power Consumption



6-1. [Adaptor: Editech TYPE2541 5V/2A]: Operation mode (4KP60 on USB hard disk + iperf 50Mbps)

Test Results of power consumption:

F/W version: 4.9.113 #1MonFeb 1122:40:43 CST 2019

H/W version: V025

Item No.	AC port	DC port	Remark
AP61302Z6-7	220Vac/36.4mA @60Hz, 2.95W	5.05Vdc/454mA, 2.292W	

6-2. [Adaptor: Editech TYPE2541 5V/2A]: Active standby mode(log in SKB UI and power of by RCU)

Test Results of power consumption:

F/W version: 4.9.113 #1MonFeb 1122:40:43 CST 2019

H/W version: V025

Item No.	AC port	DC port	Remark
AP61302Z6-7	220Vac/25.60mA @60Hz, 1.956W	5.08Vdc/283mA, 1.4376W	

7. EMI test

7.1 Test Condition

- BOX play 4K video by using external hard disk.
- Ethernet is connected to AP WIFI and run iperf base on 1Gbps to server.
- HDMI output port connects to TV through the HDMI cable.
- MIC input port connects to MIC cable
- DC Power cable is also connected.
- Open site condition

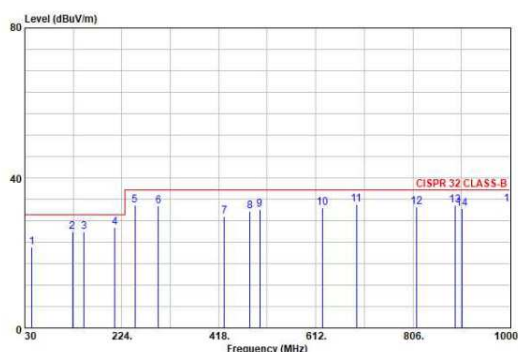


7.2 Test result



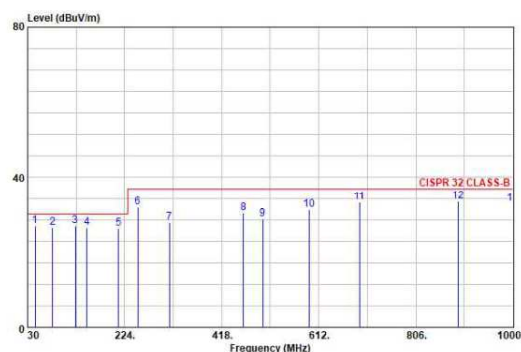
International Certification Corp. (全球檢測股份有限公司)
Tel : 886-3-271-8666 Fax : 886-3-318-0155
No.3-1, Lane 6, Wen 33rd Rd., Kwei Shan Hoiang, Tao Yuan Hsein 333, Taiwan (R.O.C.)

Model : T99X171.00
Sample No. : E02 (A)+A01, Ad: SMPS (TYPE2541) 220V/60Hz
Remark : Ping LAN 1Gbps TtGen 950Mbps, BT remote c
ontrol with earphone Play VLC MP4, Audio
Setting Mic ON HDMI 4K/60Hz, DIODES/AP61
30226-7+3PEAK/TPL 740 Series
Test Data : 2021/09/25 Test Site : OS01-LK
Cordition : OS01-9168 (20220124) Antenna Pol. : HORIZONTAL
Test By : Alex Tsai Temp. (Degree C) : 32 Humidity (%) : 55



International Certification Corp. (全球檢測股份有限公司)
Tel : 886-3-271-8666 Fax : 886-3-318-0155
No.3-1, Lane 6, Wen 33rd Rd., Kwei Shan Hoiang, Tao Yuan Hsein 333, Taiwan (R.O.C.)

Model : T99X171.00
Sample No. : E02 (A)+A01, Ad: SMPS (TYPE2541) 220V/60Hz
Remark : Ping LAN 1Gbps TtGen 950Mbps, BT remote c
ontrol with earphone Play VLC MP4, Audio
Setting Mic ON HDMI 4K/60Hz, DIODES/AP61
30226-7+3PEAK/TPL 740 Series
Test Data : 2021/09/25 Test Site : OS01-LK
Cordition : OS01-9168 (20220124) Antenna Pol. : VERTICAL
Test By : Alex Tsai Temp. (Degree C) : 32 Humidity (%) : 55



The test result is under specification

TLV62569DRLR 2nd source introduce AP61302Z6-7

8. Conclusion

	TLV62569DRLR(main)	AP61302Z6-7 (2nd)
Total test Results	PASS	
Can be introduce to 2nd source?	Yes	