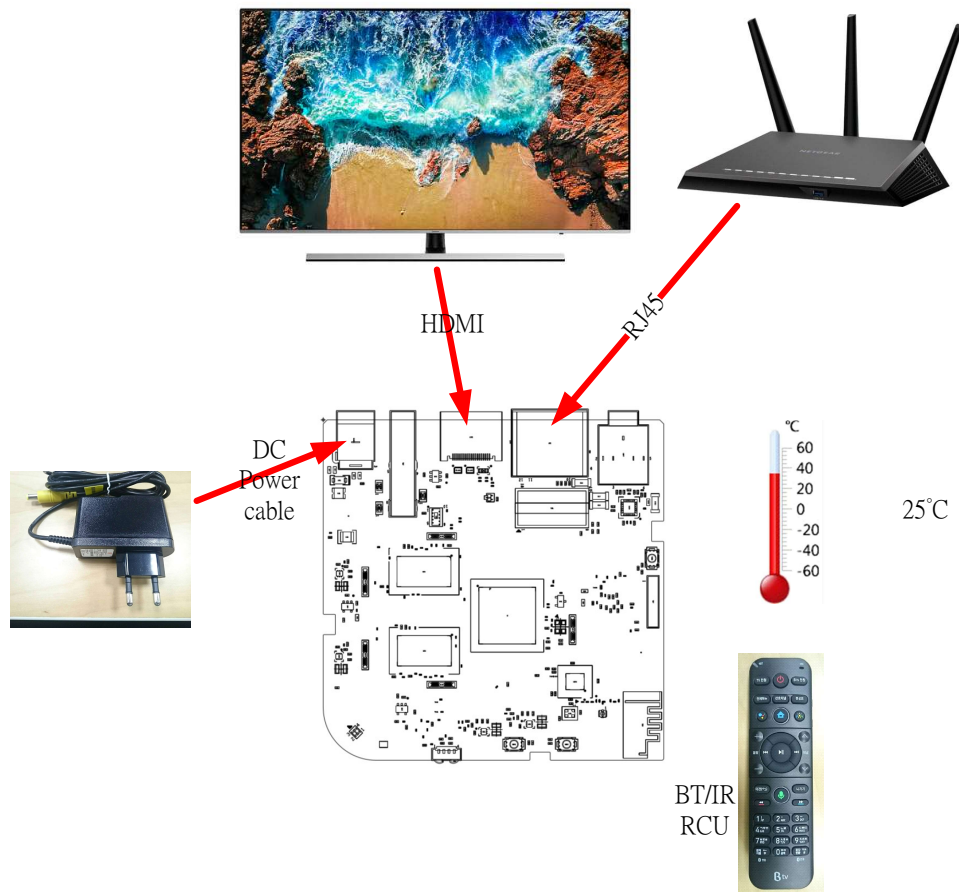


Hardware Unit Test Report

Power Ripple Test

Hardware version	FW version	Sample No.	eMMC Flash P/N
V005	4.9.113 #1 Mon Feb 11 22:40:43 CST 2019	S/N:	KLM8G1GETF-B041

1. Power Test Setup (1)



1.1 Test Condition

BOX play 4K video via Ethernet by using YouTube. HDMI output port connects to TV through HDMI cable. The temperature is about 25 degrees.

1.2 Result and Picture

Power Rail	Specification (+-5%)	Test Result (mV)	Figure	Pass/Fail
	Max Ripple (mV)			
PP_PWR_IN (5V)	250	92	Figure 1	Pass
HDMI_PW (5V)	250	98	Figure 2	Pass
USB_5V (5V)	250	48	Figure 3	Pass
VDD_EE(0.8V)	40	32	Figure 4	Pass
VDDCPU*	40	35.2	Figure 5	Pass
P3V3 (3.3V)	165	60	Figure 6	Pass
P2V5 (2.5V)	125	60	Figure 7	Pass
P1V8 (1.8V)	90	42	Figure 8	Pass
EMMC_VDDQ (1.8V)	90	52	Figure 9	Pass
P1V2 (1.2V)	60	52	Figure 10	Pass

Note * VDDCPU power rail is using voltage identification and control by PWM. This report is fix in 1V.

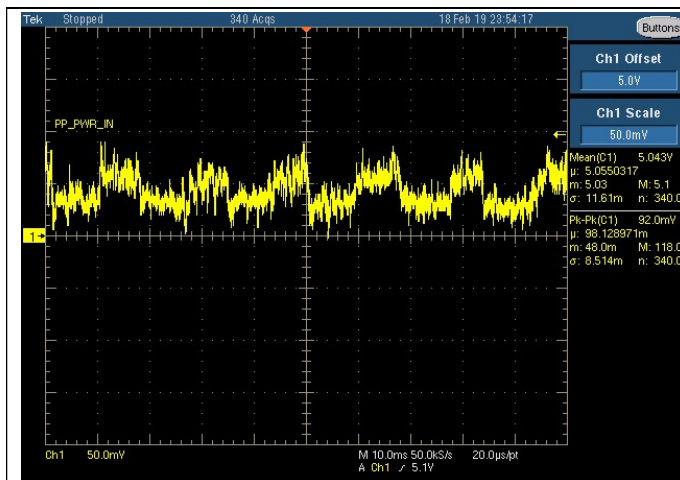


Fig. 1: PP_PWR_IN

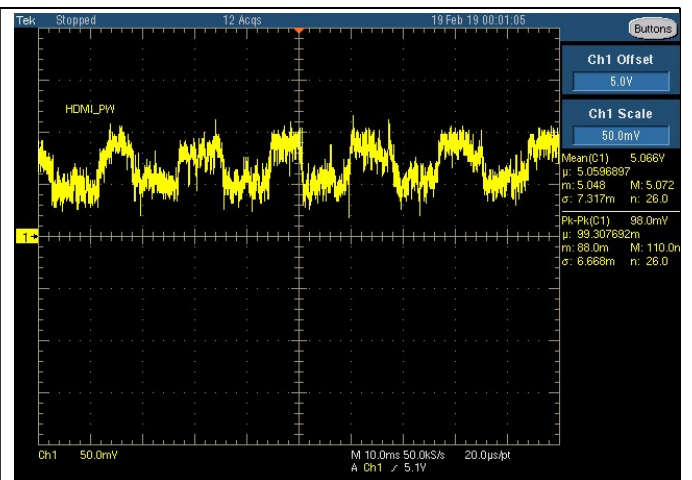


Fig. 2: HDMI_PW

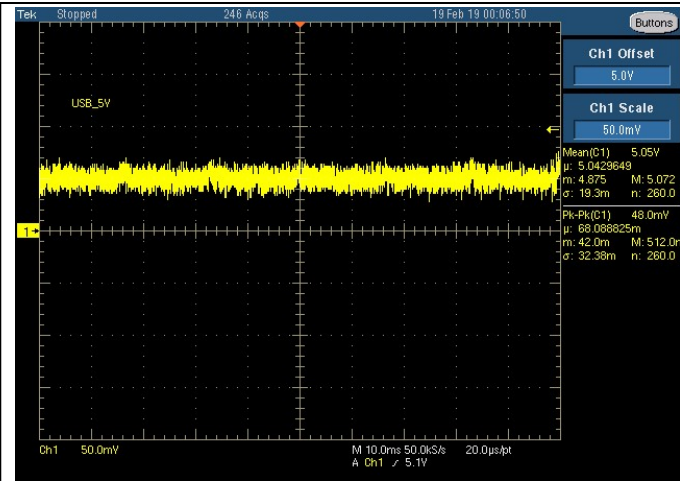


Fig. 3: USB_5V

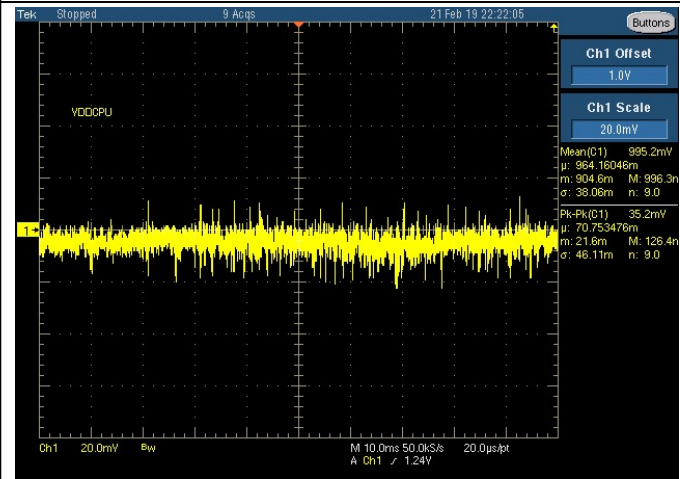


Fig. 5: VDDCPU

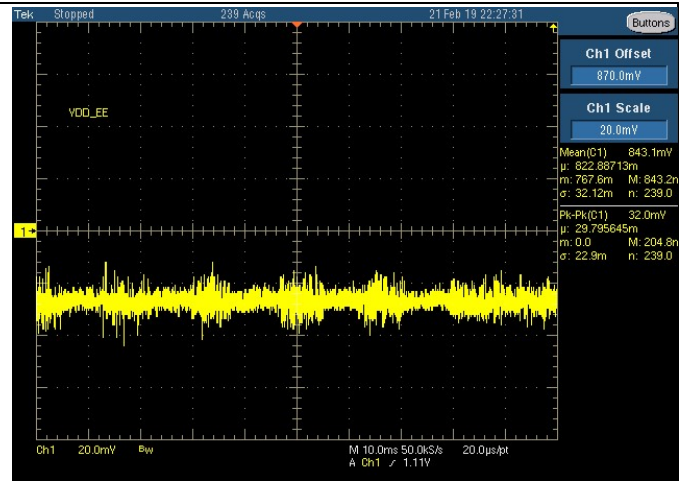


Fig. 4: VDD_EE

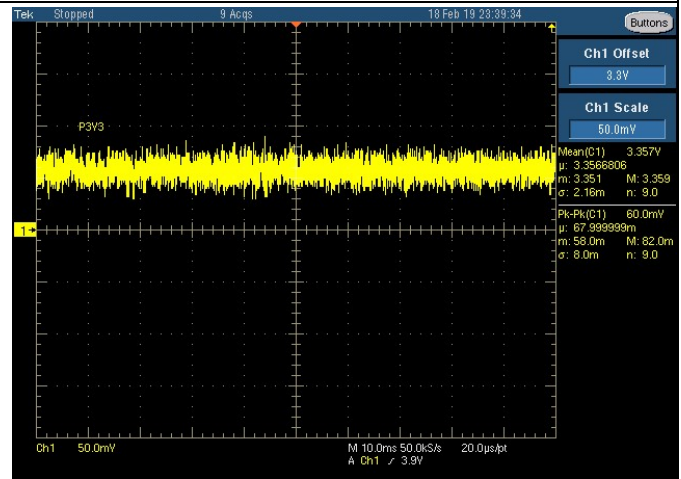


Fig. 6: P3V3

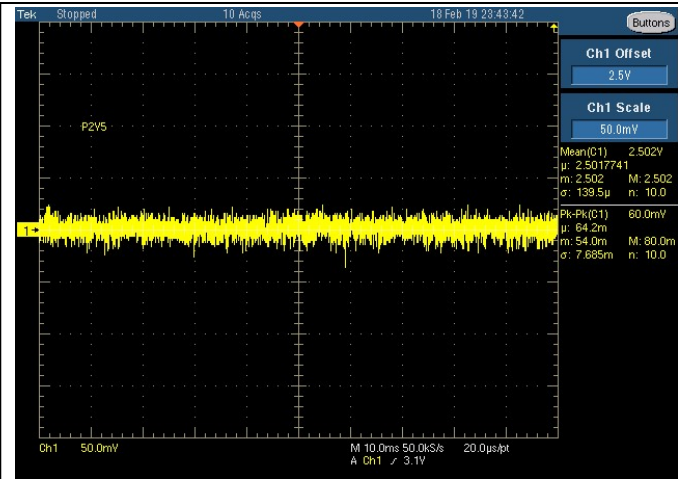


Fig. 7: P2V5

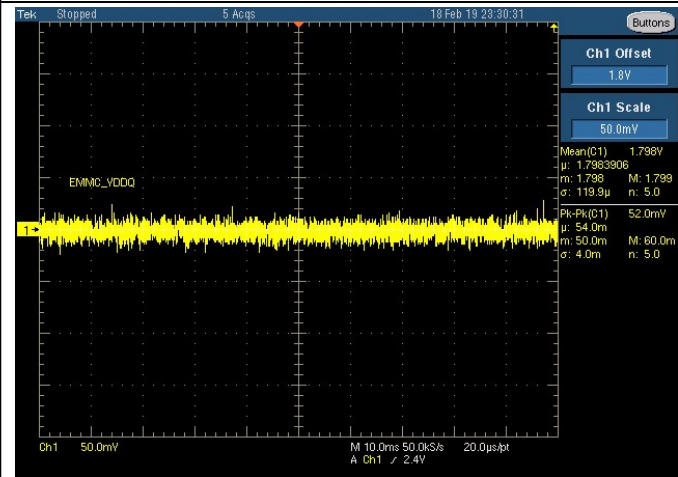


Fig. 9: EMMC_VDDQ

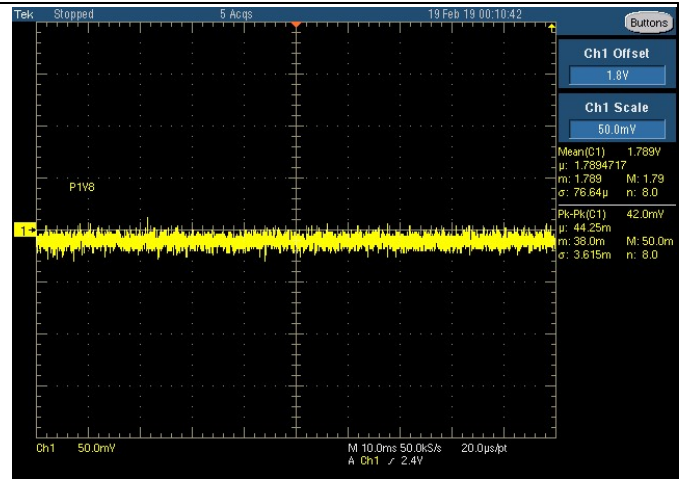


Fig. 8: P1V8

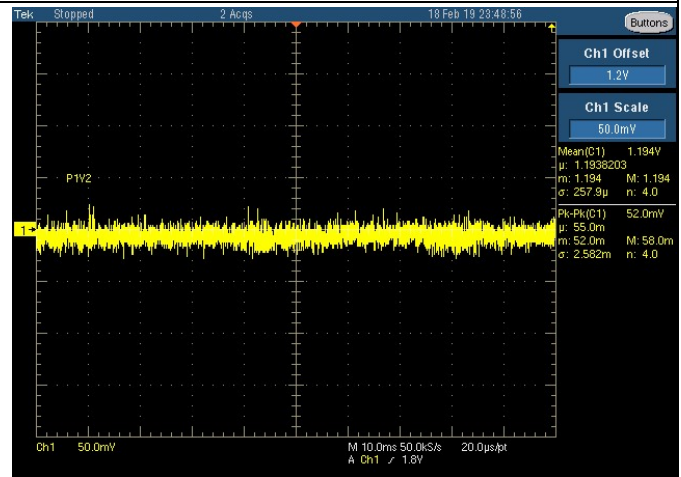
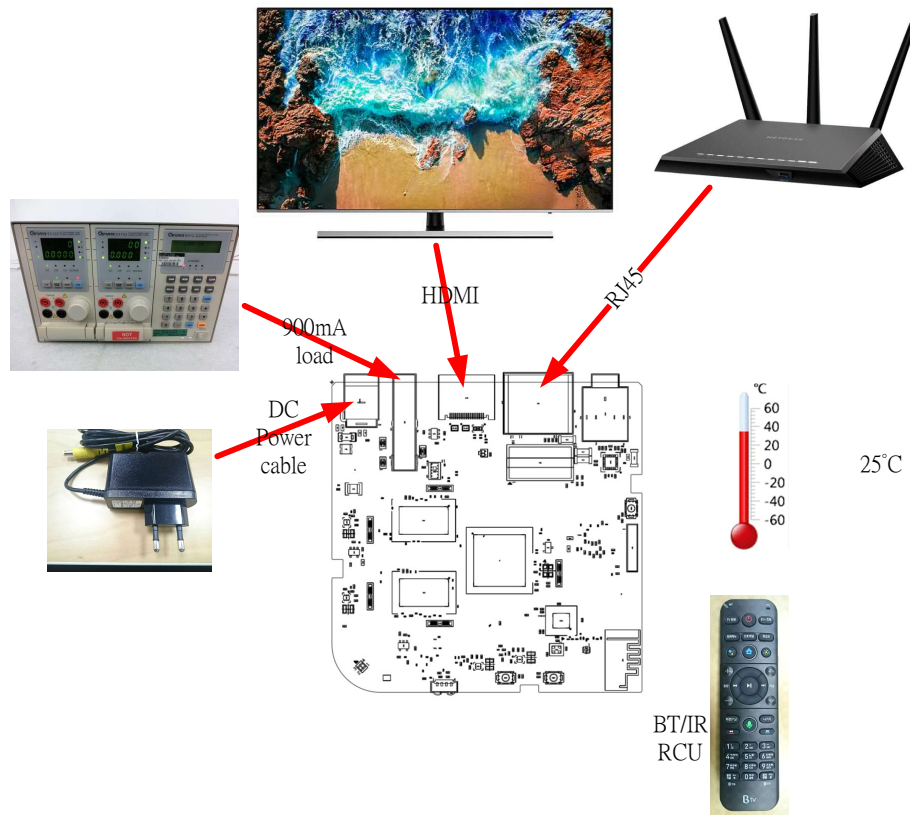


Fig. 10: P1V2

2. Power Test Setup (2)



2.1 Test Condition

BOX play 4K video via Ethernet by using YouTube. The USB port is loading with 900mA. HDMI output port connects to TV through HDMI cable. The temperature is about 25 degrees.

2.2 Result and Picture

Power Rail	Specification (+-5%)	Test Result (mV)	Figure	Pass/Fail
	Max Ripple (mV)			
PP_PWR_IN (5V)	250	100	Figure 1	Pass

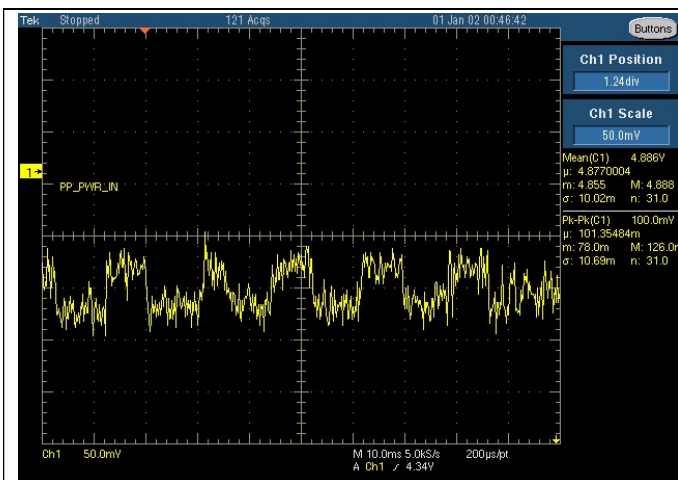
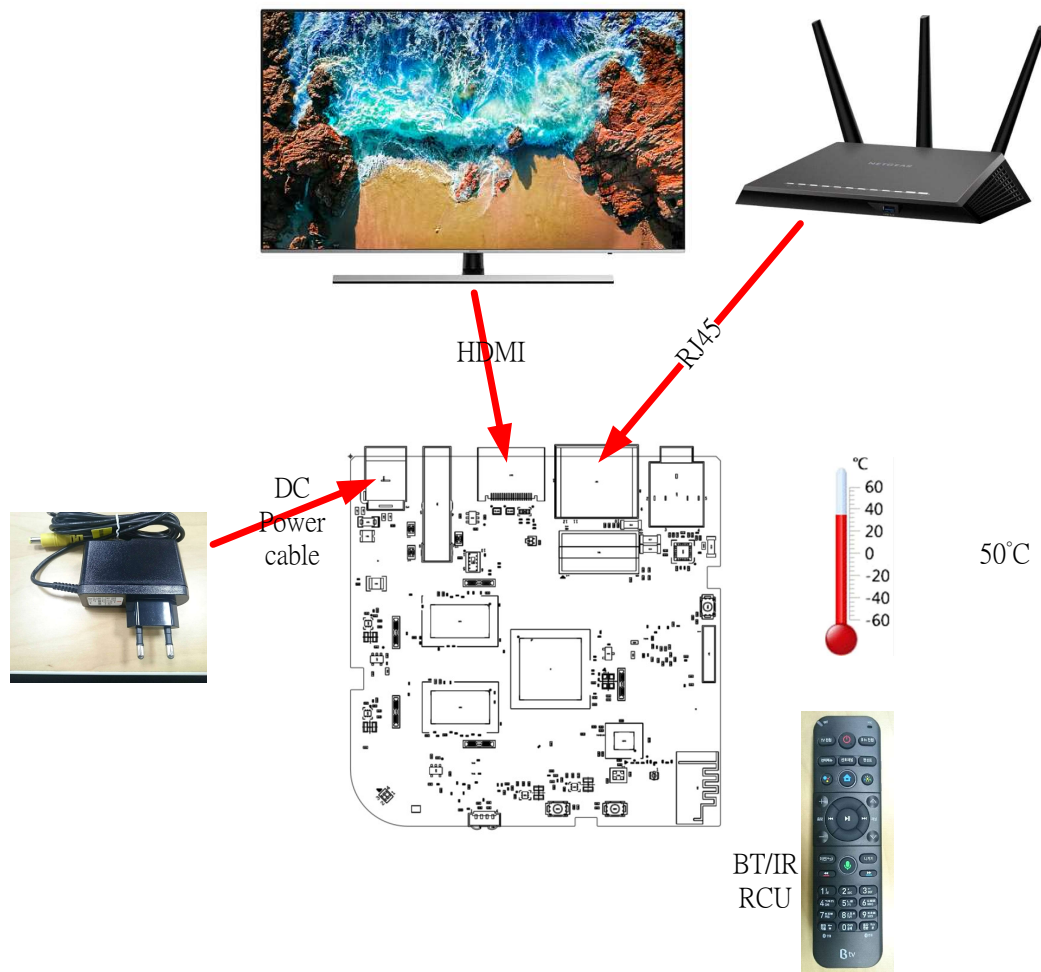


Fig. 11: PP_PWR_IN with USB 900mA load

3. Power Test Setup (3)



3.1 Test Condition

BOX play 4K video via Ethernet by using YouTube. HDMI output port connects to TV through HDMI cable. The temperature is about 50 degrees.

1.3 Result and Picture

Power Rail	Specification (+-5%)	Test Result (mV)	Figure	Pass/Fail
	Max Ripple (mV)			
PP_PWR_IN (5V)	250	142	Figure 12	Pass
HDMI_PW (5V)	250	78	Figure 13	Pass
USB_5V (5V)	250	84	Figure 14	Pass
VDD_EE(0.8V)	40	36	Figure 15	Pass
VDDCPU*	40	36	Figure 16	Pass
P3V3 (3.3V)	165	38	Figure 17	Pass
P2V5 (2.5V)	125	28	Figure 18	Pass
P1V8 (1.8V)	90	12	Figure 19	Pass
EMMC_VDDQ (1.8V)	90	12	Figure 20	Pass
P1V2 (1.2V)	60	38	Figure 21	Pass

Note * VDDCPU power rail is using voltage identification and control by PWM. This report is fix in 1V.

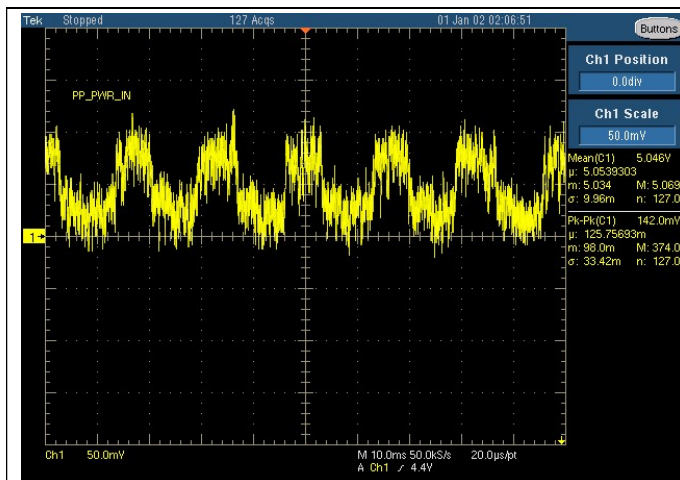


Fig. 12: PP_PWR_IN

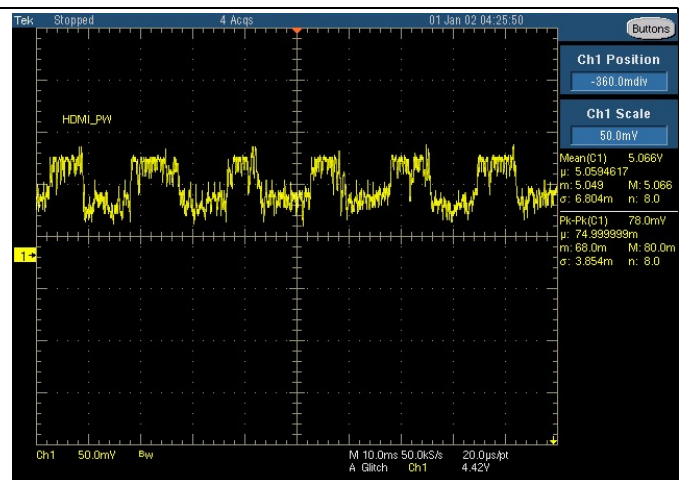


Fig. 13: HDMI_PW

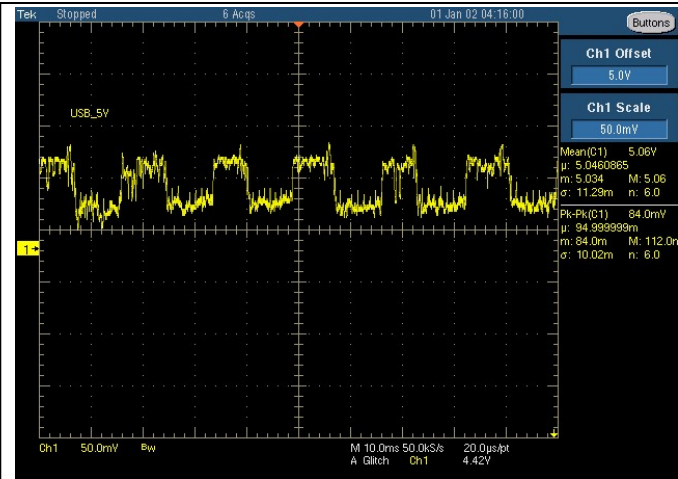


Fig. 14: USB_5V

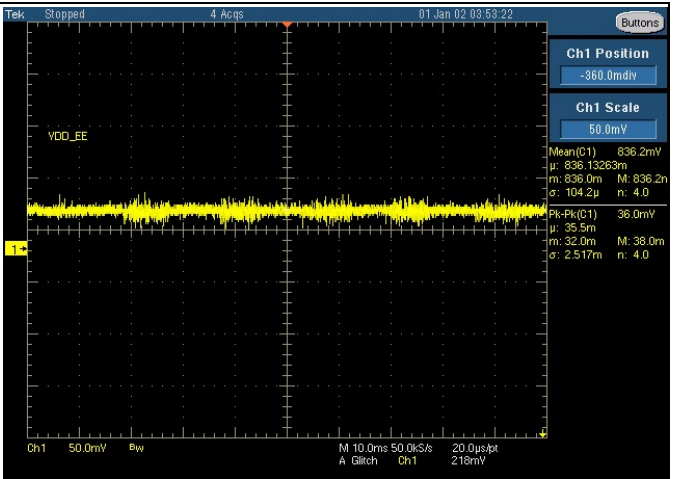


Fig. 15: VDD_EE

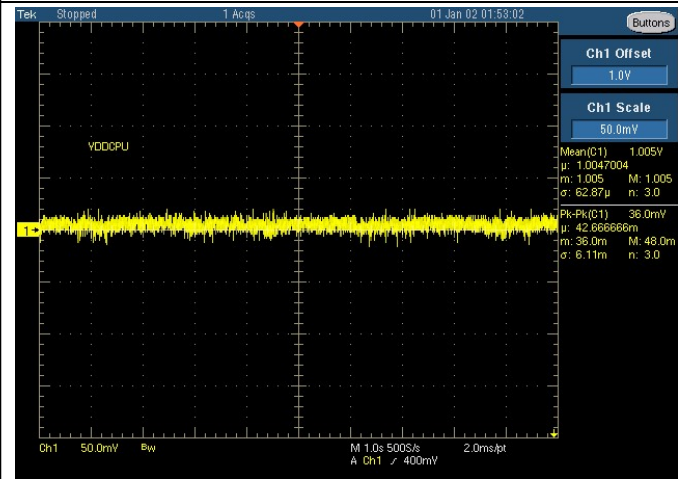


Fig. 16: VDDCPU

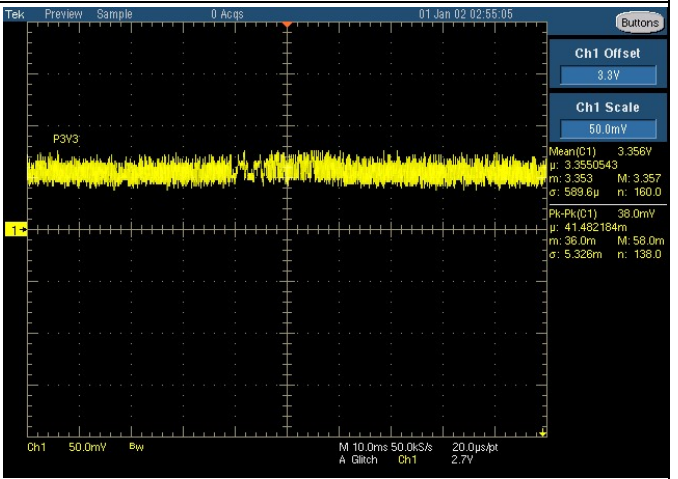


Fig. 17: P3V3

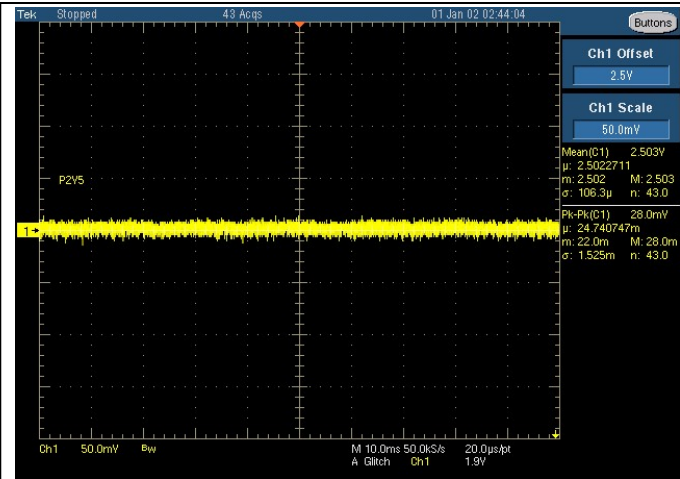


Fig. 18: P2V5

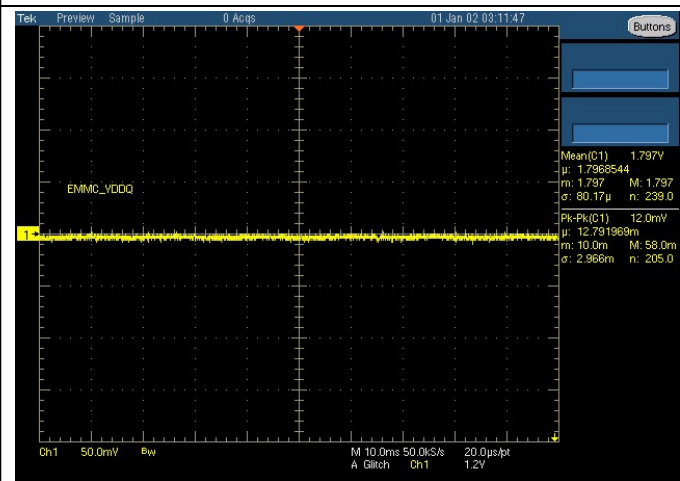


Fig. 20: EMMC_VDDQ



Fig. 19: P1V8

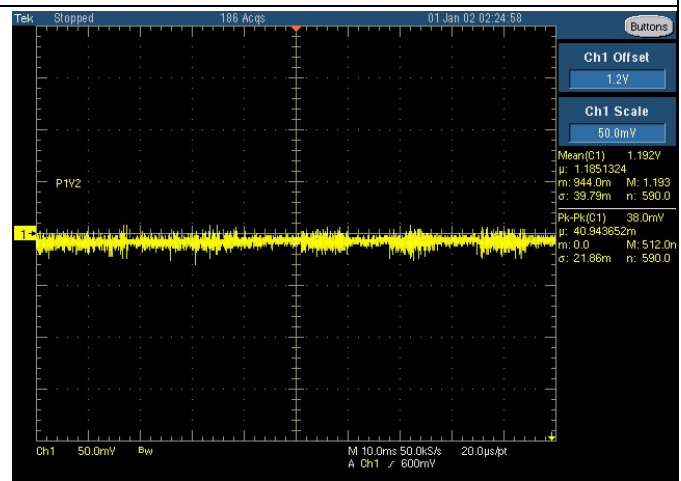
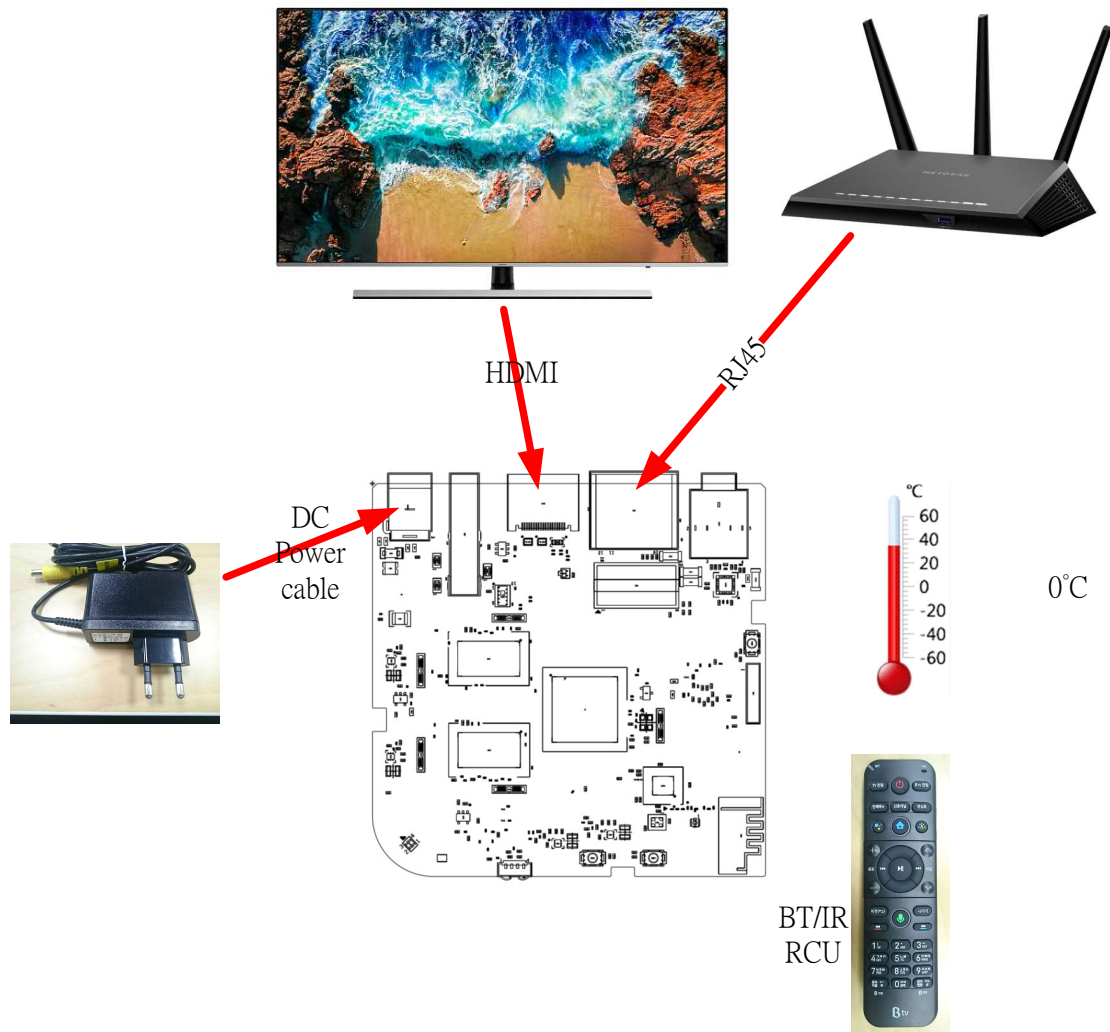


Fig. 21: P1V2

4. Power Test Setup (4)



4.1 Test Condition

BOX play 4K video via Ethernet by using YouTube. HDMI output port connects to TV through HDMI cable. The temperature is about 0 degrees.

1.4 Result and Picture

Power Rail	Specification (+-5%)	Test Result (mV)	Figure	Pass/Fail
	Max Ripple (mV)			
PP_PWR_IN (5V)	250	116	Figure 22	Pass
HDMI_PW (5V)	250	94	Figure 23	Pass
USB_5V (5V)	250	150	Figure 24	Pass
VDD_EE(0.8V)	40	32	Figure 25	Pass
VDDCPU*	40	40	Figure 26	Pass
P3V3 (3.3V)	165	60	Figure 27	Pass
P2V5 (2.5V)	125	68	Figure 28	Pass
P1V8 (1.8V)	90	10	Figure 29	Pass
EMMC_VDDQ (1.8V)	90	20	Figure 30	Pass
P1V2 (1.2V)	60	60	Figure 31	Pass

Note * VDDCPU power rail is using voltage identification and control by PWM. This report is fix in 1V.

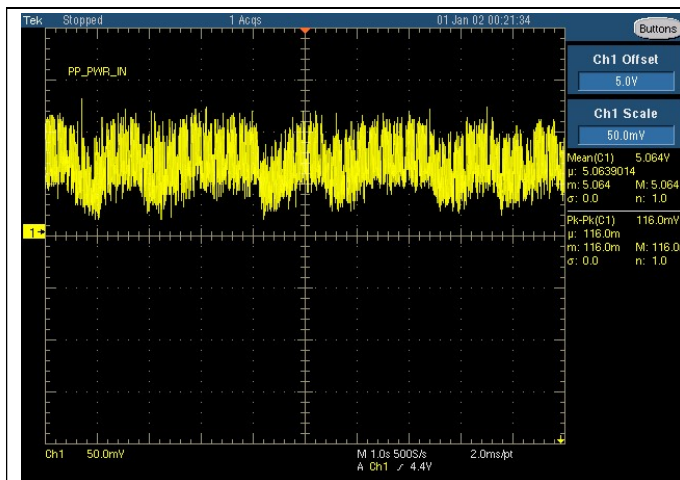


Fig. 22: PP_PWR_IN

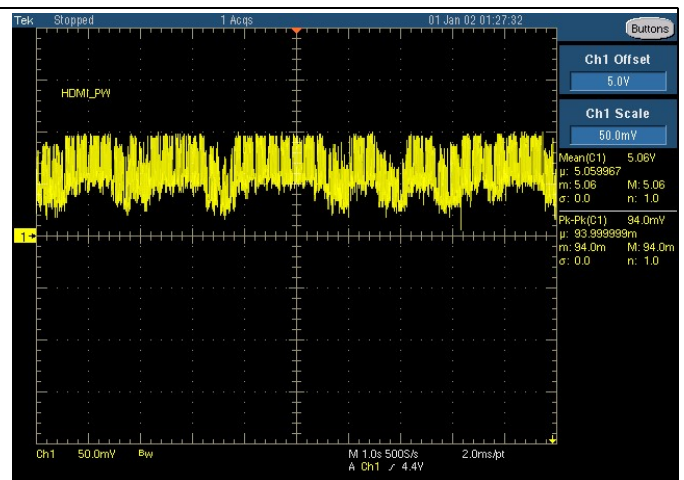


Fig. 23: HDMI_PW

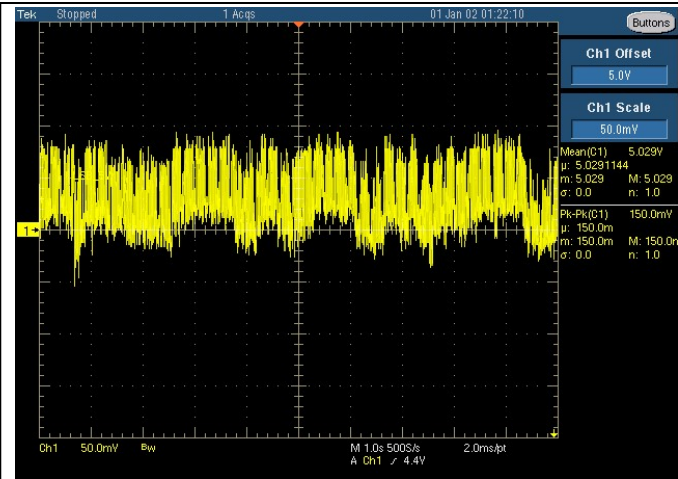


Fig. 24: USB_5V

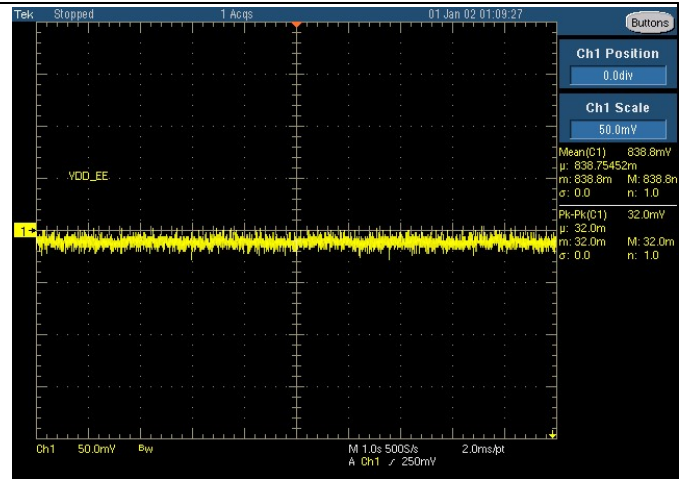


Fig. 25: VDD_EE

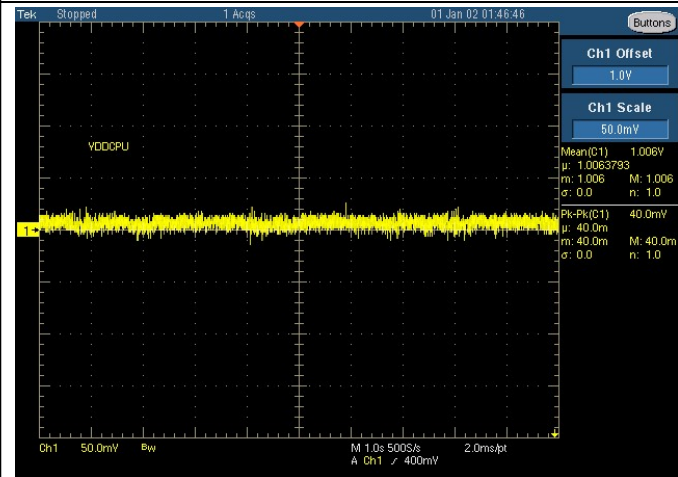


Fig. 26: VDDCPU

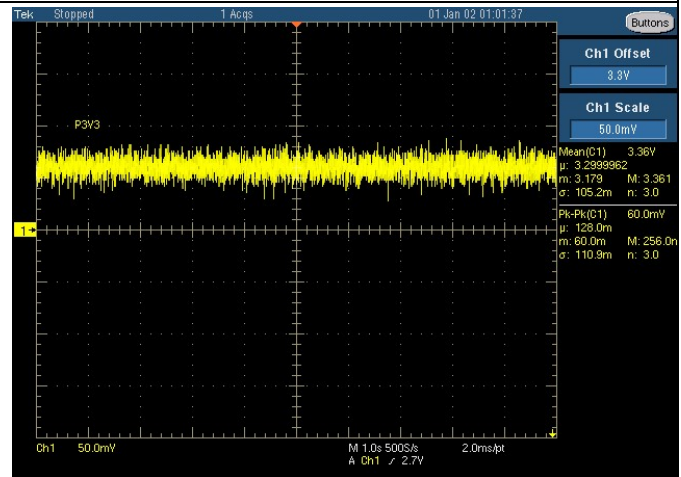


Fig. 27: P3V3

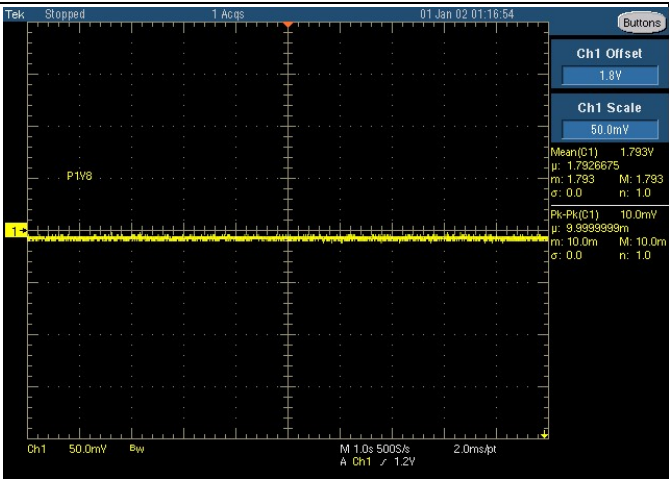
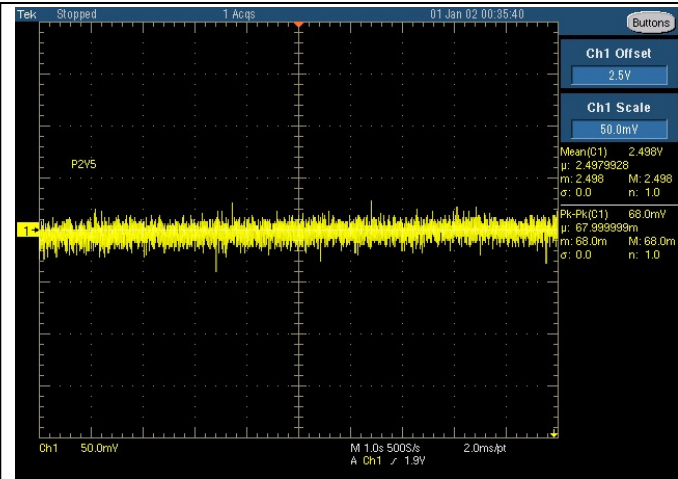


Fig. 28: P2V5

Fig. 29: P1V8

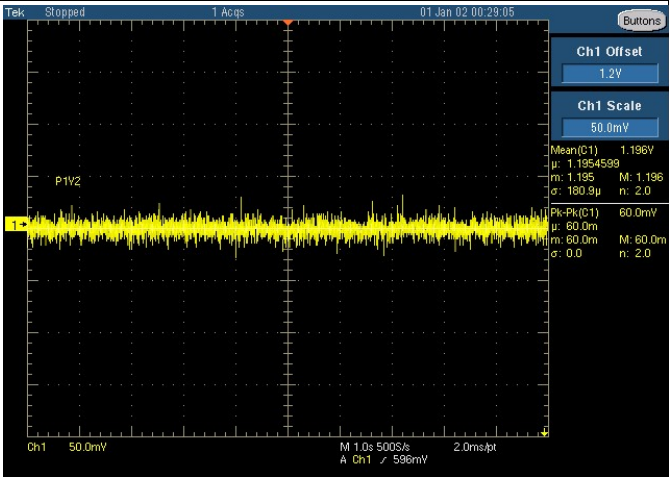
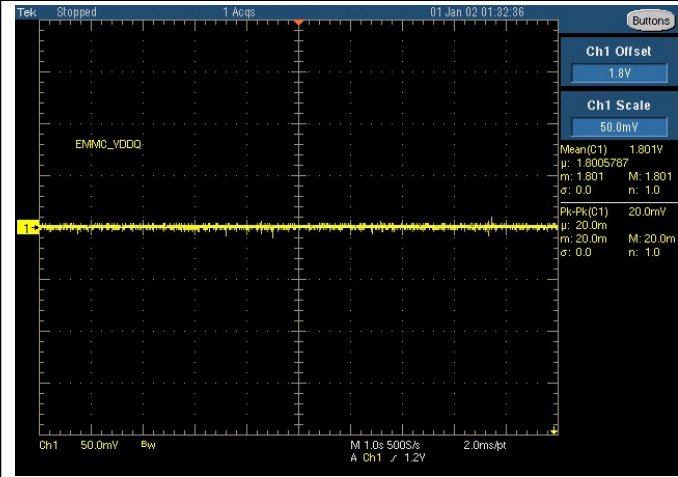


Fig. 30: EMMC_VDDQ

Fig. 31: P1V2