We measured the VCR terminal voltage and the control current from the FB pin on the previous LLC (EVM modified) about the waveform puncture operation at light load, so the data is shown below.

＜UCC256302　Primary SW current, VCR voltage, FB pin current observation result＞

1. Input condition：DC380V（DC variable power supply）
2. Output condition：5V10A only　24V transformer winding open　CC mode setting with electronic load.
3. Test conditions：　EVM(modified)，Output setting：Depends on each load factor of measurement data.

3-1. LLC modified transformer　1)_ Turn ratio _P1／P2(bias)／S1(5)／S2(24)＝36／3／1／4.5

2)_ Primary inductance：803μH　(100kHz no load)

3)_ Leakage inductance：35μH(short only 5 V winding)

：28μH(short only 24V winding)

：17μH(Both 5 V and 24 V windings are shorted)

3-2. EVM Other parts change place and (reason)

①C10 only：0.015μF→0.01μF（Correcting corrugated rampage）

② R14：732k→847kΩ（Lost changed to approximate constant.）

③ R23：6.04k→,1.5kΩ（For 5V output change）

④ R25：147k→50.96kΩ（For 5V output change）

⑤ R26：16.9k→16.5kΩ（For 5V output change）

⑥ D6,D7：Diode→FET（For synchronous rectification to improve efficiency）

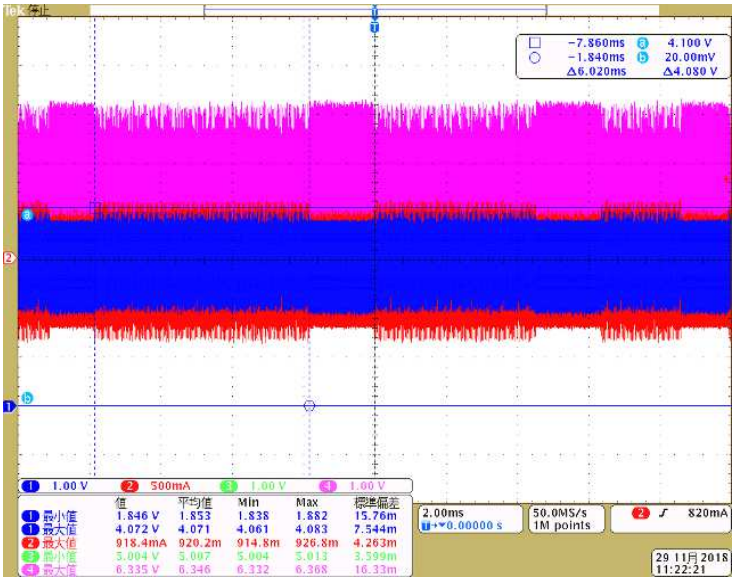
⑦ R21：10KΩ→ open　（Section 4.3 Only during waveform measurement）

⑧ R32：short →10kΩInsert（Section 4.3 Only during waveform measurement）

4. Waveform observation result

4-1. 5V Output _ at light load　VCR terminal voltage

4-1.1. 5V4.15A，24V0A　It has a waveform that shakes with noise.



① Blue: VCR terminal　[1V/div]

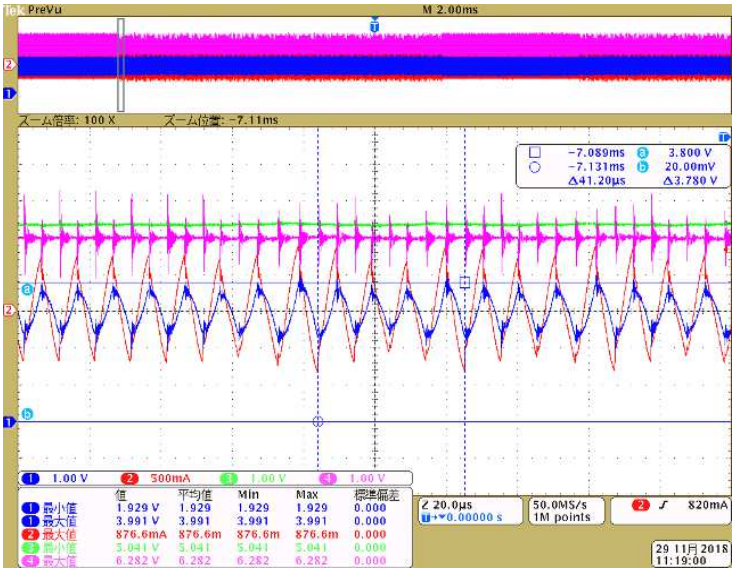
② Red: LLC_Isw　[0.5A/div]

③ Green: FB terminal　[1V/div]

④ Pink: 5V_out　[1V/div]

H:[2mS/div]

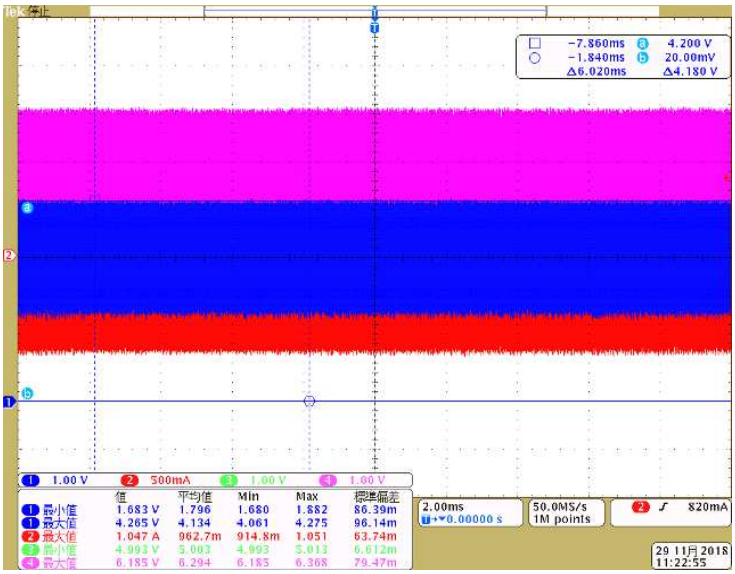
4-1.2. Same as above (enlarged waveform) The current waveform is wavy.



① Blue: VCR terminal [1V/div]
② Red: LLC_Isw [0.5A/div]
③ Green: FB terminal [1V/div]
④ Pink: 5V_out [1V/div]
H:[20uS(2mS)/div]

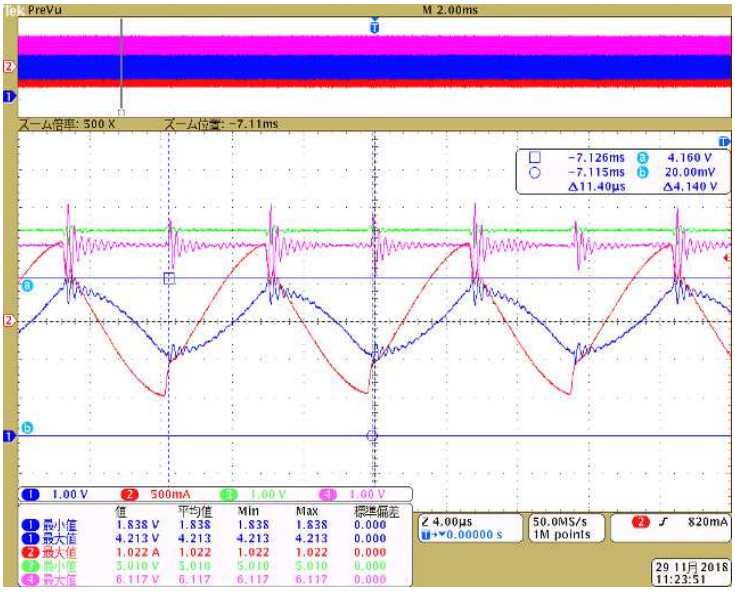
4-2. 5 V output _ VCR terminal voltage at rated load

4-2.1 5V10A, 24V0A The current waveform is uniform and almost stable.



① Blue: VCR terminal [1V/div]
② Red: LLC_Isw [0.5A/div]
③ Green: FB terminal [1V/div]
④ Pink: 5V_out [1V/div]
H:[2mS/div]

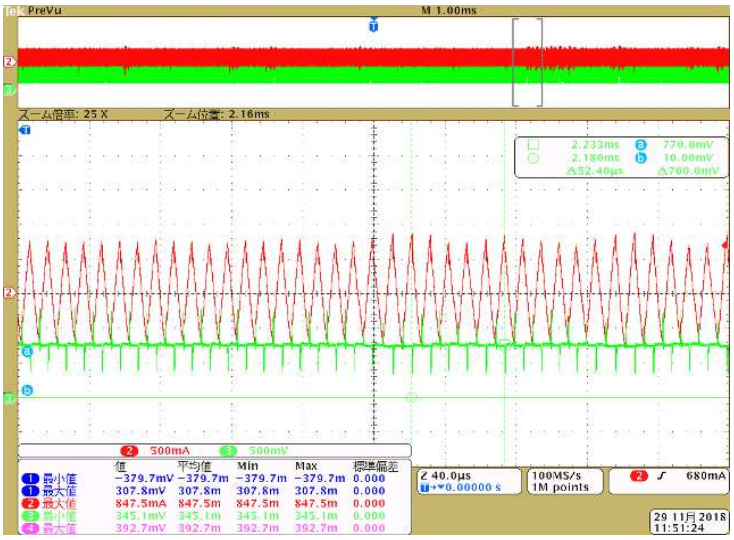
4-2.2 Same as above (enlarged waveform) The current waveform is uniform and almost stable.



④ Blue: VCR terminal [1V/div]
⑤ Red: LLC_Isw [0.5A/div]
⑥ Green: FB terminal [1V/div]
④ Pink: 5V_out [1V/div]
H:[4uS(2mS)/div]

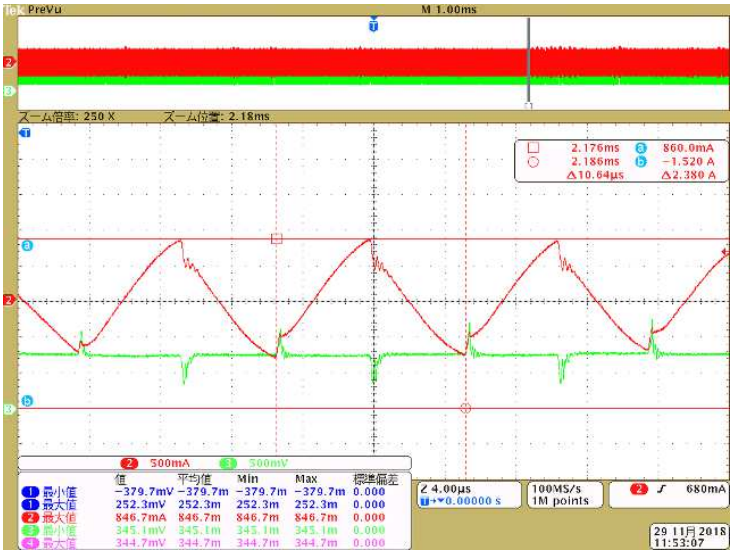
4-3. Measurement of VF terminal current (voltage of R32 terminals) at R32 insertion

4-3.1 5V4.15A, 24V0A The current waveform is wavy. R32 voltage also has slight fluctuation.



① OPEN
② Red: LLC_Isw [0.5A/div]
③ Green:R32 Voltage [0.5V/div]
④ OPEN
H:[40μS(1mS)/div]

4-3.2 Same as above (enlarged waveform)



① OPEN
② Red: LLC_Isw [0.5A/div]
③ Green: R32 voltage [0.5V/div]
④ OPEN
H:[4μS(1mS)/div]

4-3.3 5V10A, 24V0A Both current waveform and R32 voltage are stable.

① OPEN
② Red: LLC_Isw [0.5A/div]
③ Green: R32 voltage [0.5V/div]
④ OPEN
H:[4μS(80μS)/div]