

Synergy21

ALL1087 - Primary dimmable high efficiency LED constant current power supply

General information

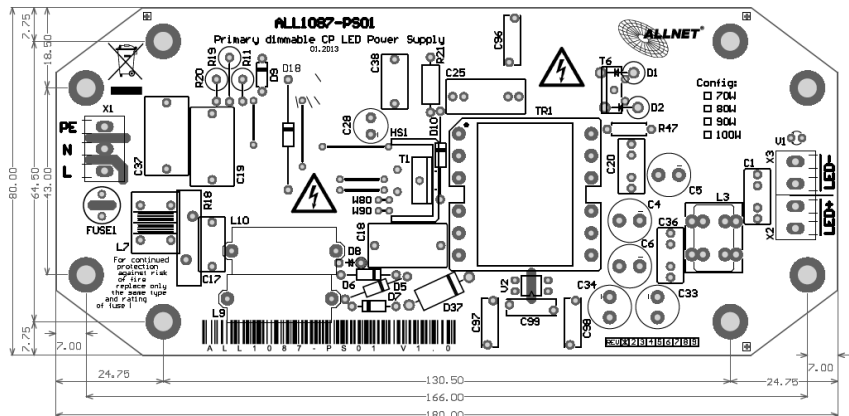
The ALL1087 power supply represents an isolated primary dimmable high efficiency LED driver for use in high power LED lighting products like floodlights.

Operating from AC supplies of 207V to 253V (e.g. European line voltage), the ALL1087 is capable of driving LED COB arrays in range 25V to 45V. The typical efficiency is up to 91%. With respect of the power supply efficiency, the primary power consumption can be configured from 70W up to 100W (refer to chapter configuration).



Primary dimming is performed by applying a phase-cut line voltage to the power supply input. The power supply is able to modulate the LED power directly. For this reason, the inrush-current has been minimized to <math><1A</math>, enabling to switch on many lamps with this power supply together at the same time. To achieve smooth phase-cut dimming with the most dimmers, the power factor reaches up to 98%.

The ALL1087 includes fault protection modes for LED short and open, overtemperature (with active power derating), overcurrent and overvoltage errors. It features an internally fixed OVP value of 48-51V (depends on configured power) which protects the device in the event of a failure in the LED array.



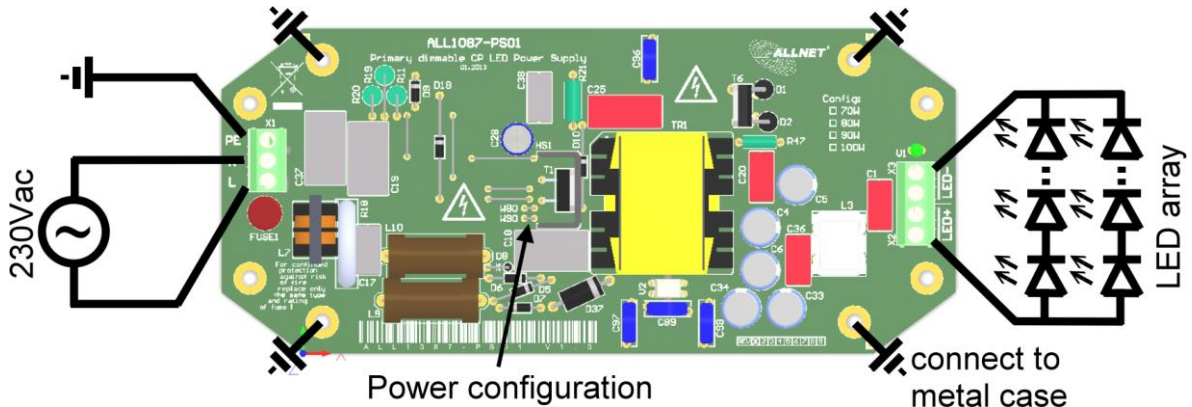
To reach higher output power, more power supply outputs can be connected together. This allows to build up (redundant) power supply clusters with up to six same power supplies.

With low EMI interferences (refer to EMI section) meets the ALL1087 the EMC regulatories EN55015/55022 Class B and withstand surge levels >1kV, burst levels >2.5kV and direct ESD discharge against earthed metal case up to 22kV (MachineModel). The primary to secondary insulation test voltage is >2500Vac/60sec.

For using the ALL1087 this power supply must be mounted in an earthed metal case or in other isolated housing and the correct lamp power level must be selected.

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Connecting diagram:



Configuration:

The original delivered ALL1087 supplies about 95W to the LED (need about 104W on the line input). To configure the ALL1087 power level, the wire-bridges “W80”, “W90” can be used (cut for opening). For selecting the right power, the following table should be use:

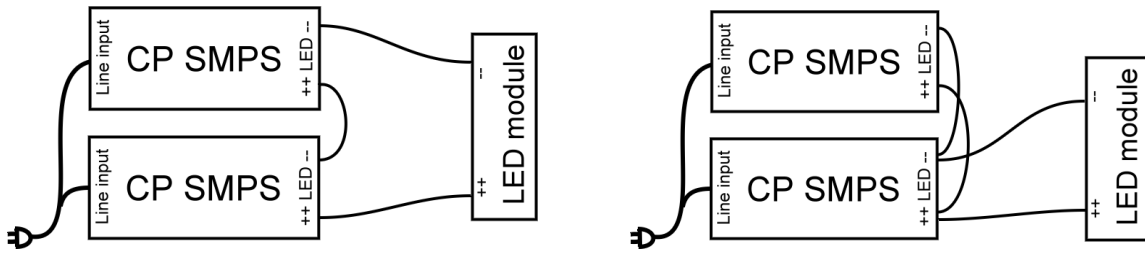
Powertable	Bridge “W80”	Bridge “W90”	LED-Power	Line-in power
100W	closed	closed	93W	103W
90W	opened	closed	84W	93W
80W	closed	opened	75W	83W
70W	opened	opened	66W	73W

Technical Data:

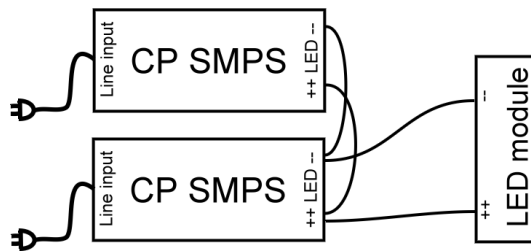
- Input voltage (normal mode): 207 to 253Vac (47 to 63Hz)
- Accepted input voltage: 200 to 270Vac (current maybe vary, refer to diagrams)
- Primary dimmable via phase-cut dimmers (leading/trailing edge dimmers)
- Inrush current: <1A
- Output power range: 66 to 93W (±10%)
- Constant power behaviour (CP)
- Output voltage range: 25 to 45V (refer to diagrams)
- Output OVP shutdown: 48 to 51V
- Startup time: typical 750ms
- Emergency light function: Input >40Vdc, >30Vac (at 10% nominal power)
- Temperature range: -25 to 65°C
- Overall efficiency: 89 to 91%
- High power factor: 90 to 98% (refer to diagrams)
- Temperature derating: Power reducing at 60°C PCB temperature
- Thermal shutdown: at 85°C PCB temperature to <20% of nominal power
- Outputs connectable in series/parallel to reach higher power/voltage

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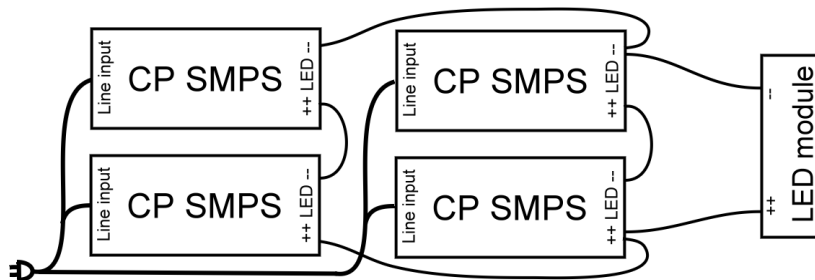
Stacking of CP-mode power supplies:



Serial connecting of two power supply outputs Parallel connecting of two power supply outputs



Redundant parallel connecting of two power supply outputs. If one SMPS (primary path or transformer) or line voltage fail, the LED remains lit at the half of its power.

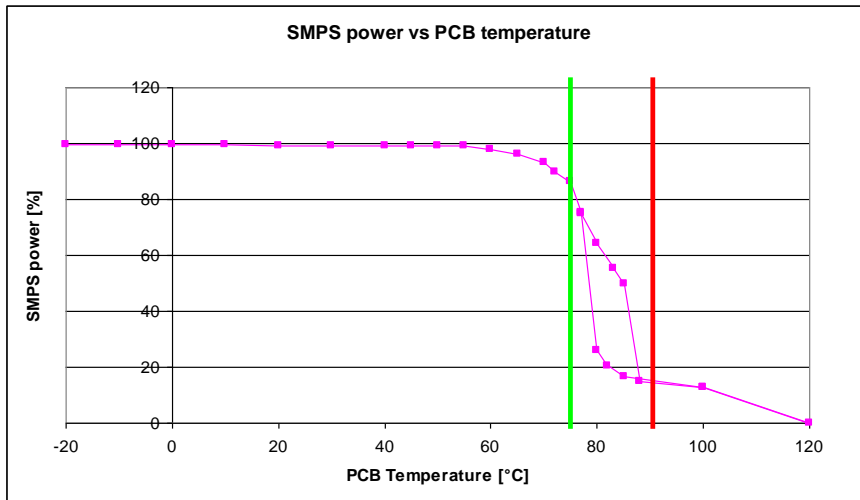


Connecting of more power supplies to reach higher output power

Technical diagrams:

Temperature behaviour (typical):

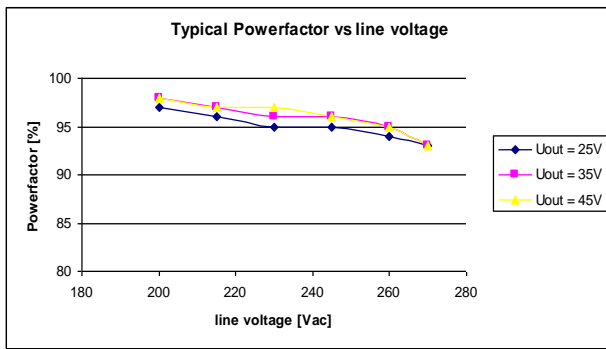
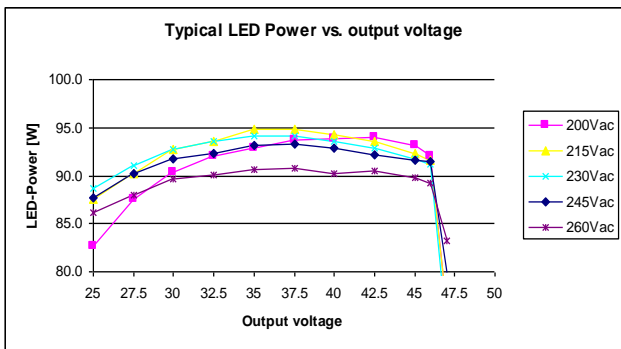
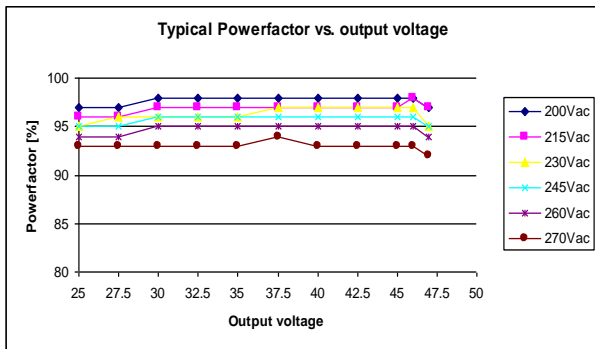
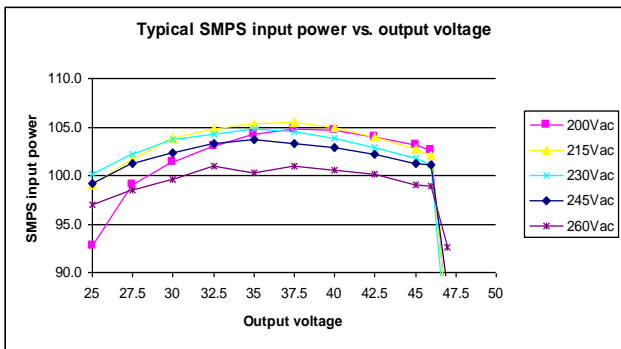
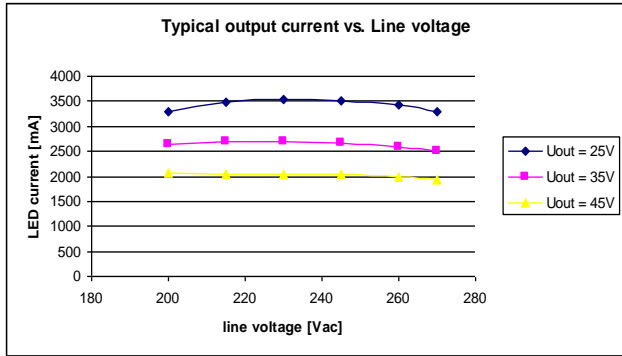
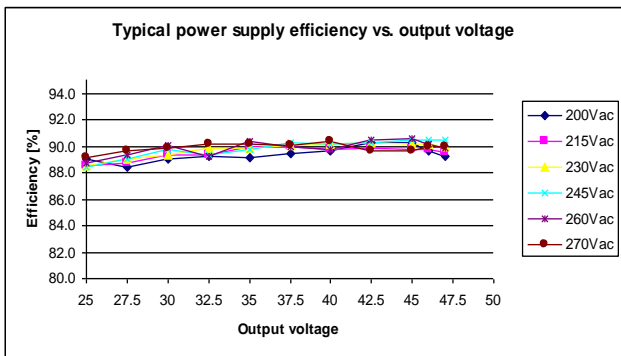
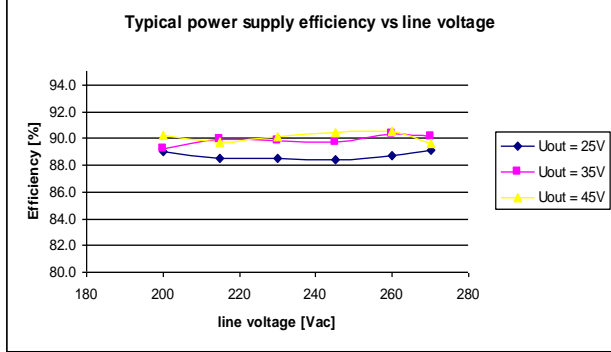
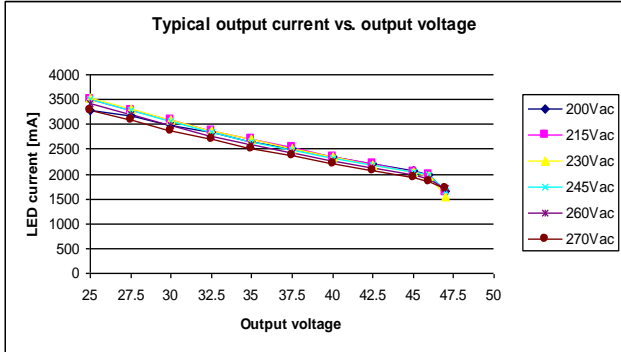
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Thermal shutdown at 85°C, auto recover at typical 75°C.

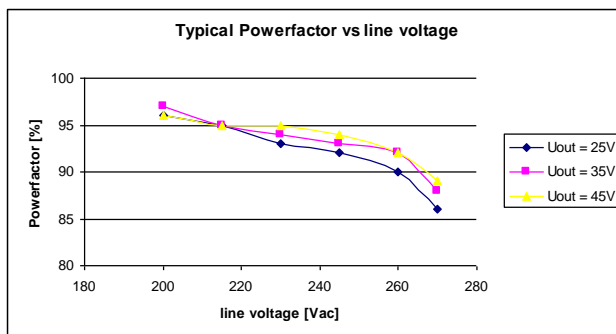
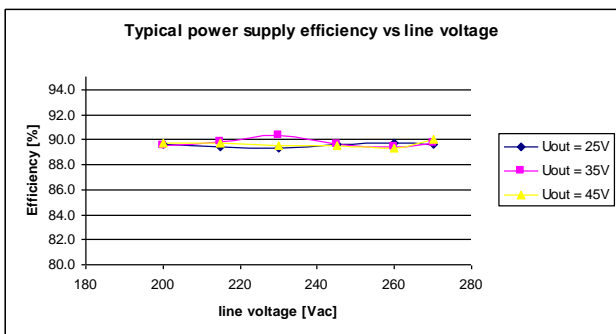
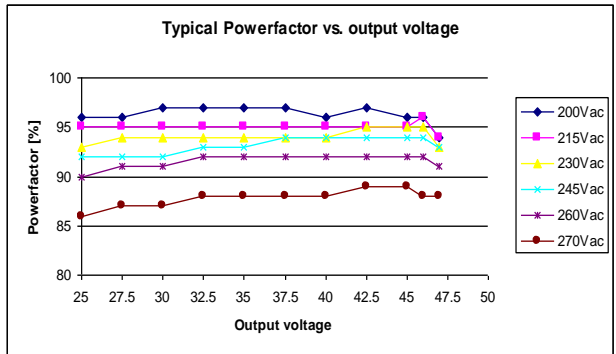
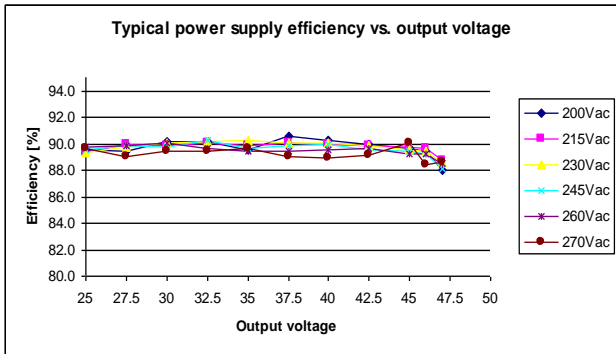
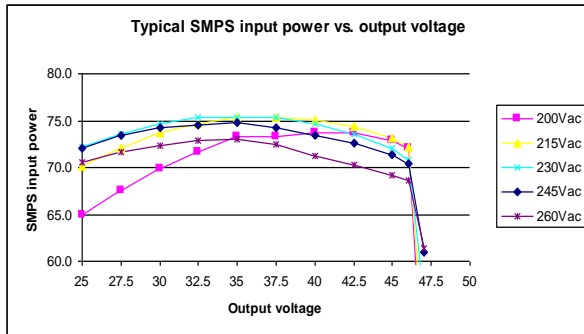
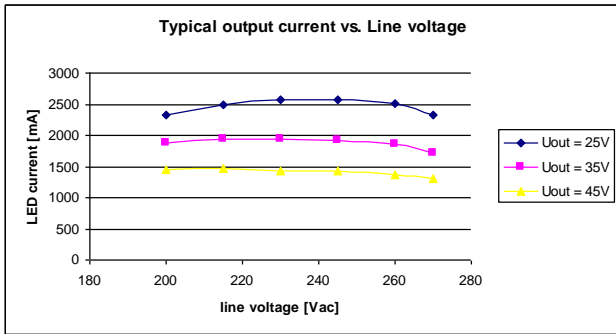
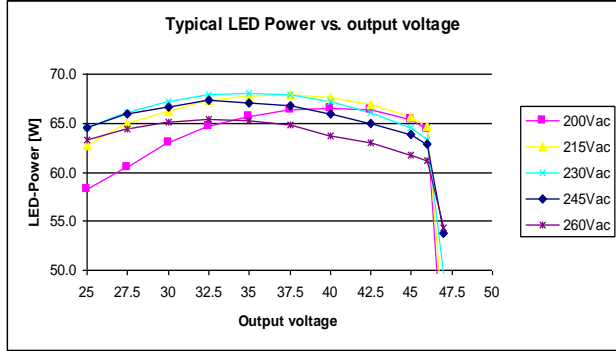
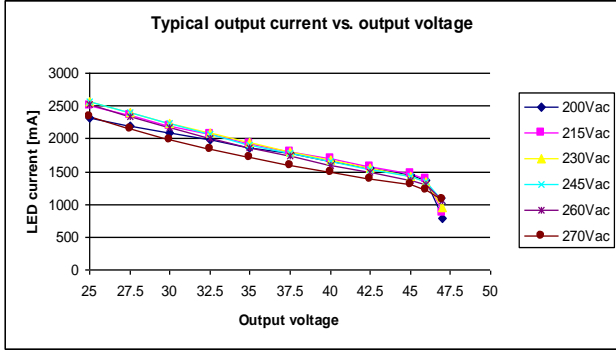
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Configuration: 100W selected



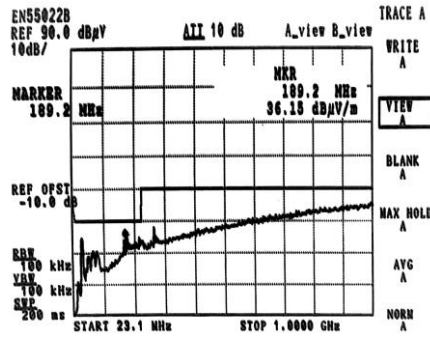
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Configuration: 70W selected

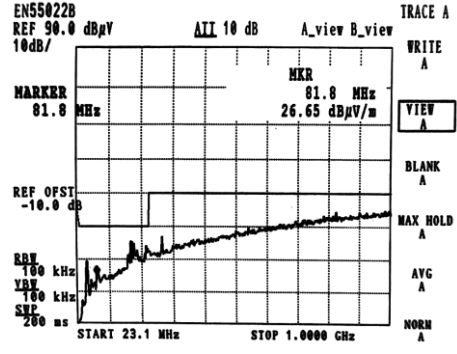


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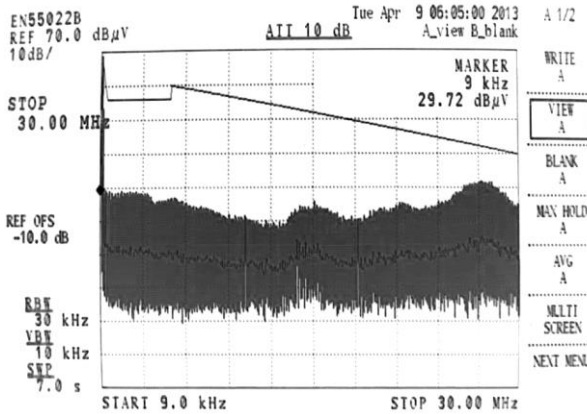
EMI pre-compliance measurements:



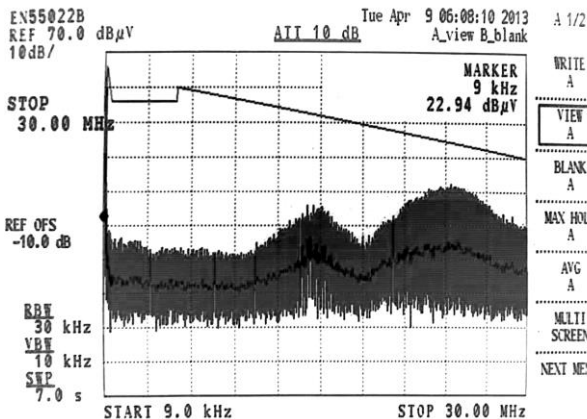
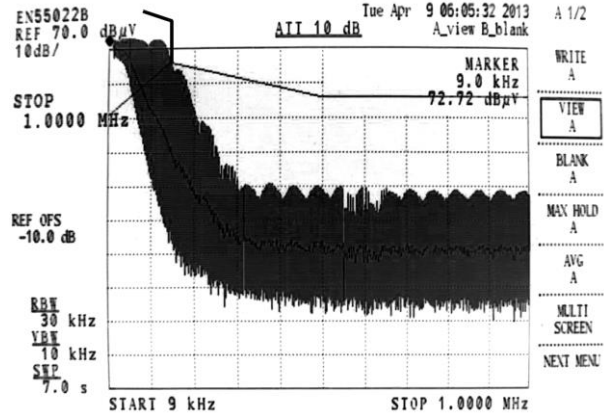
Radiated emissions measurement at 100W (max hold)



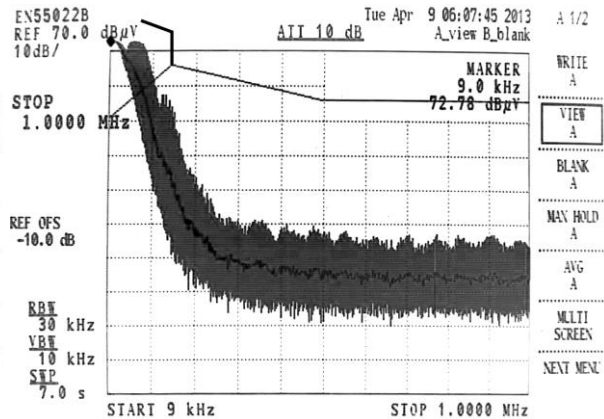
at 70W (max hold)



Conducted emissions measurement at 100W



Conducted emissions measurement at 70W



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