

The Main Differences Between Lighting test Standard CISPR 15: 2018 and 2013 Versions

There are many customers feedback that their LED luminaires can't pass CE Certificate EMI Radiation Test (30-300MHz) in 2019 year but it is the same one can be passed last year. Why this happen? The main reason is the new EMI test standard were updated to CISPR15:2018.

The **EMI Test** is the most important and difficult to test for the LED luminaires. This article LISUN engineer will take us to study the new standard [CISPR15:2018](#) comparing to [CISPR15:2013](#).



CDNE-M316 Coupling Decoupling Network for Communication Lines



EMI-9KB EMI Receiver System (9k-300MHz)

The latest version of the international standard for lighting equipment CISPR 15: 2018 has been released on February 16, 2018. Please click the below to download the new standard:



Compared with the old version CISPR 15 : 2013+A1: 2015, the major changes are as follows:

1. Removed the insertion loss test requirements and the original related Appendix A;
2. Table4, Table5, Table6 add conduction interference limit table requirements for power ports for ELV lamps and cables other than power ports;
3. Made the following changes for the conduction interference value of the wired network interfaces (Check details from the standard Table2 & Table3):

Table 2 – Disturbance voltage limits at wired network interfaces other than power supply

Frequency range (MHz)	Limits dB(μ V)		Method
	Quasi-peak	Average	
0,15 to 0,50	84 to 74	74 to 64	CISPR 16-2-1 and 8.4
0,50 to 30	74	64	

NOTE 1 The limits decrease linearly with the logarithm of the frequency in the range 0,15 MHz to 0,5 MHz.

NOTE 2 The voltage disturbance limits are derived for use with an artificial asymmetrical network (AAN) which presents a common mode (asymmetric mode) impedance of 150 Ω to the measured interface.

Table 3 – Disturbance current limits at wired network interfaces other than power supply

Frequency range (MHz)	Limits dB(μ A)		Method
	Quasi-peak	Average	
0,15 to 0,50	40 to 30	30 to 20	CISPR 16-2-1 and 8.4
0,50 to 30	30	20	

NOTE 1 The limits decrease linearly with the logarithm of the frequency in the range 0,15 MHz to 0,5 MHz.

NOTE 2 The current disturbance limits are derived for use of a common mode (asymmetric mode) impedance of 150 Ω . Hence the conversion factor applied is $20 \log(150) = 44 \text{ dB}\Omega$.

A: Name is updated by the control terminal to wired network interfaces;

B: Increased the limit for testing using current probe, and it is clearly stated that as long as the disturbance current or disturbance voltage is satisfied, the conduction interference of the effective network interface can be considered to meet the standard requirements;

4. The following changes were made to the conduction interference limits of the local wired interfaces (Check details from the standard Table5 & Table6).

Table 5 – Disturbance voltage limits at local wired ports: local wired ports other than electrical power supply interface of ELV lamp

Frequency range MHz	Limits dB(μ V) ^a		Method
	Quasi-peak	Average	
0,15 to 0,50	80	70	CISPR 16-2-1 (voltage probe method) See 8.5.2.2
0,50 to 30	74	64	

^a At the transition frequency, the lower limit applies.

Table 6 – Disturbance current limits at local wired ports: local wired ports other than electrical power supply interface of ELV lamp

Frequency range MHz	Limits dB(μ A)		Method
	Quasi-peak	Average	
0,15 to 0,50	40 to 30	30 to 20	CISPR 16-2-1 See 8.5.2.3
0,50 to 30	30	20	

NOTE 1 The limits decrease linearly with the logarithm of the frequency in the range 0,15 MHz to 0,5 MHz.

NOTE 2 The current disturbance limits are derived for use of a common mode (asymmetric mode) impedance of 150 Ω , and the conversion factor applied is $20 \log(150) = 44 \text{ dB}\Omega$.

A: Name is updated by the load terminal to local wired ports;

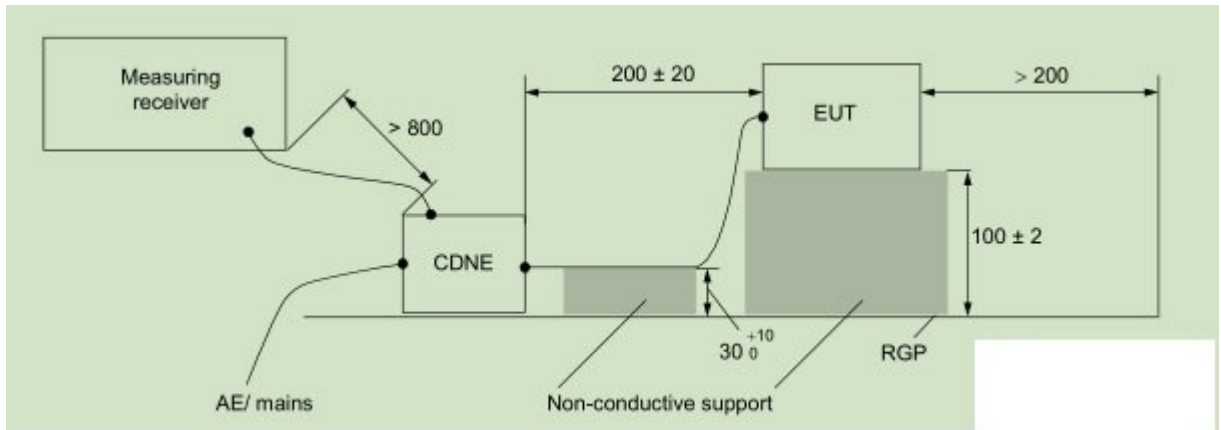
B: Increased the limit for testing using current probe, and it is clearly stated that as long as the disturbance current or disturbance voltage is satisfied, the conduction interference of the local wired ports can be considered to meet the standard requirements;

5. Quote a new test method for Radiated-field disturbance: the [CDNE](#) method, which replaces the original CDN method;

6. Specifies if use the CDN method to evaluate Radiated-field disturbance measurements, the internal working frequency of the product must be $\leq 30\text{MHz}$, and the product size should be controlled within $3\text{m} \times 1\text{m} \times 1\text{m}$ (Length*Width*Height).

7. The limit (QP/ Quasi-peak) of the CDNE method is more strict;

8. The test layout of the CDNE method:



9. In addition to the CDNE method, the Radiated-field disturbance measurements also increases the 300MHz~1GHz limit requirements as follows (QP/quasi-peak, 3m half-wave darkroom)

Test frequency (MHz)	Limit dB(uV/m)
30 to 230	40
230 to 1000	47

10. Space Radiated-field disturbance layout, adding a CDNE to power the EUT to be tested:

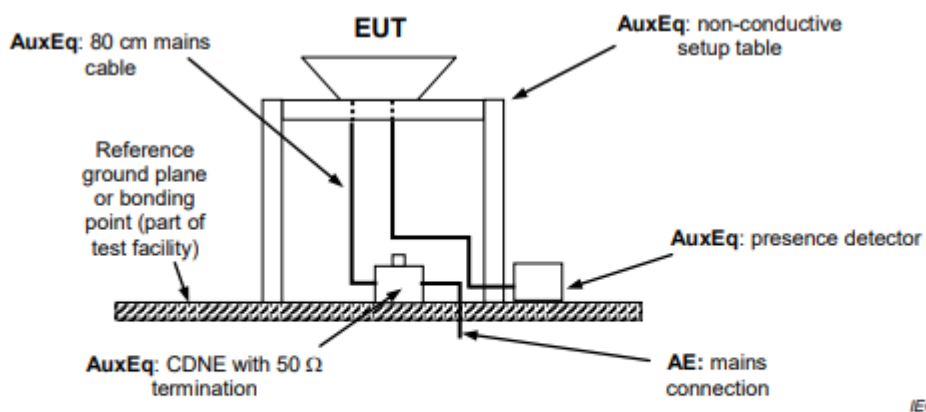


Figure C.3 – Example of arrangement of a luminaire during the radiated (OATS, SAC or FAR) disturbance measurement

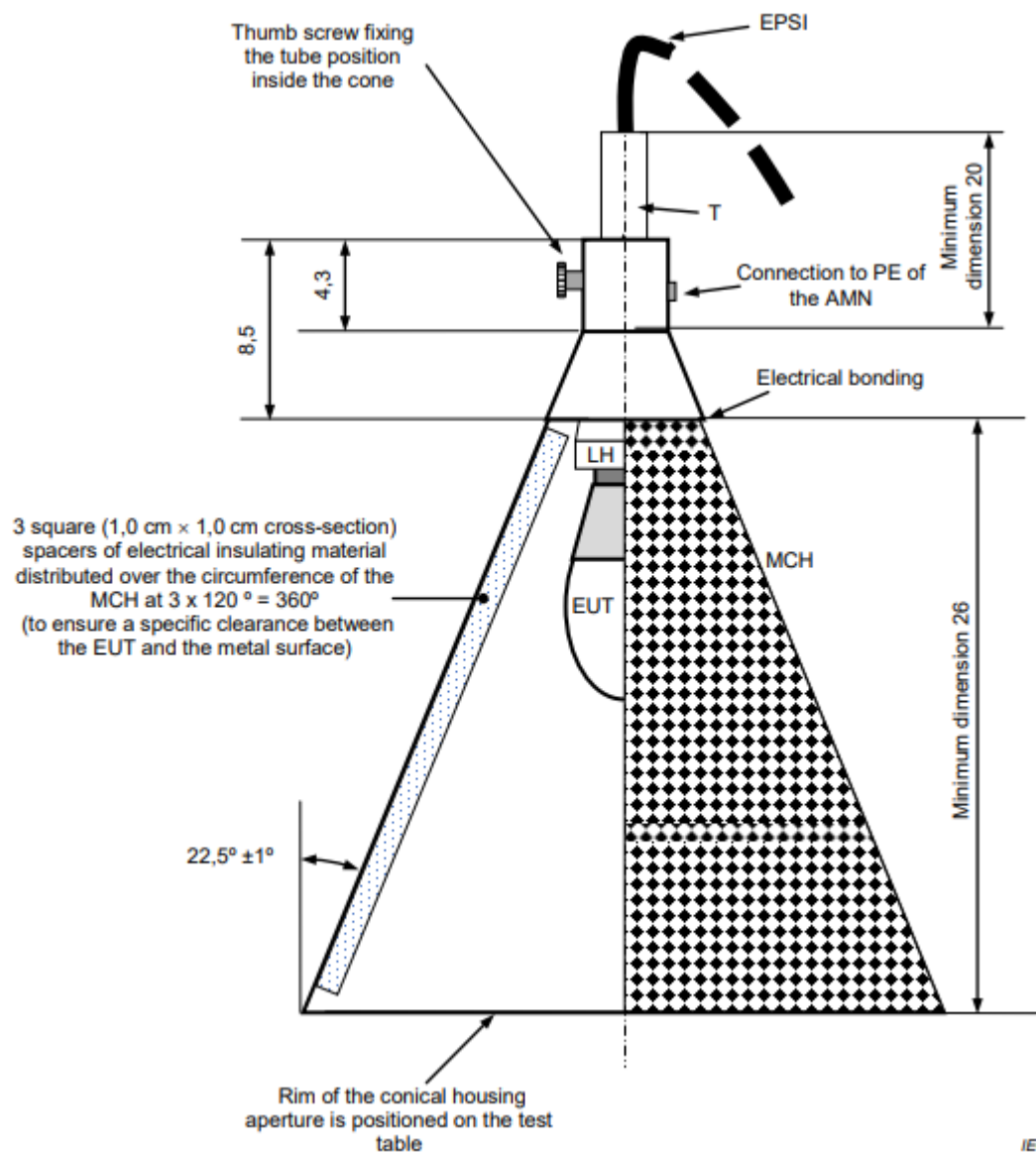
11. For the loop antenna Radiated-field disturbance measurements, added that new product with size of >1.6m can be tested according to the method in [CISPR16-1-4](#): Test in a 3m environment using a 60cm loop antenna in an open field or a half-wave dark room. This test

method can replace the loop antenna test of 3m and 4m size;

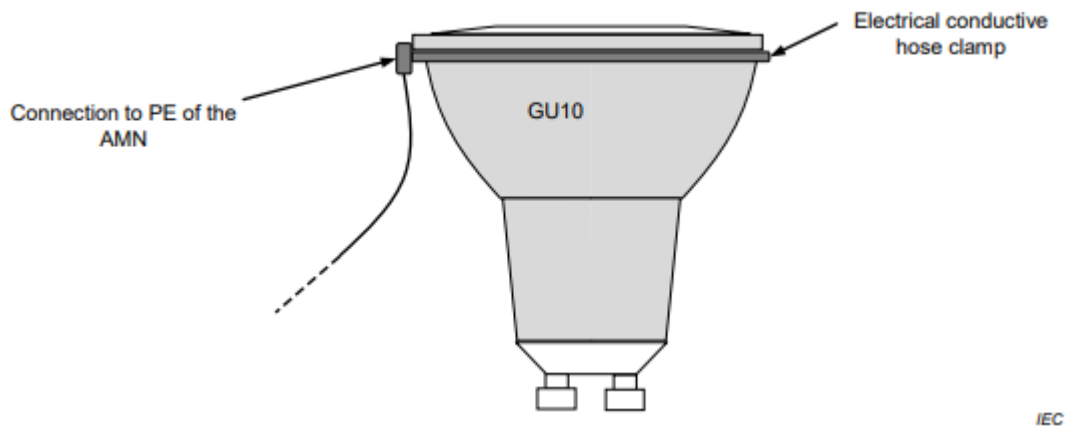
The limits of this test method are as follows (QP/quasi-peak):

Test frequency (MHz)	Limit dB (uV/m)
0.009 to 0.070	69
0.070 to 0.150	69 to 39
0.150 to 4.0	39 to 3
4.0 to 30.0	3

12. The aperture of the conical housing panel has been changed as follows:



13. For self-ballasted lamp using the GU10 bayonet cap, the conical housing or the bayonet cap itself must be connected to PE of the AMN during the conducted disturbance measurements, as shown in the following manner:



14. Corrected the aging time required for testing some of the luminaires, and clearly specified that the luminaires using LED/OLED technology, no aging requirements before testing.

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Please feel free to contact us if you need any support.

Tech Dep: Service@Lisungroup.com, Cell/WhatsApp: +8615317907381

Sales Dep: Sales@Lisungroup.com, Cell/WhatsApp: +8618917996096