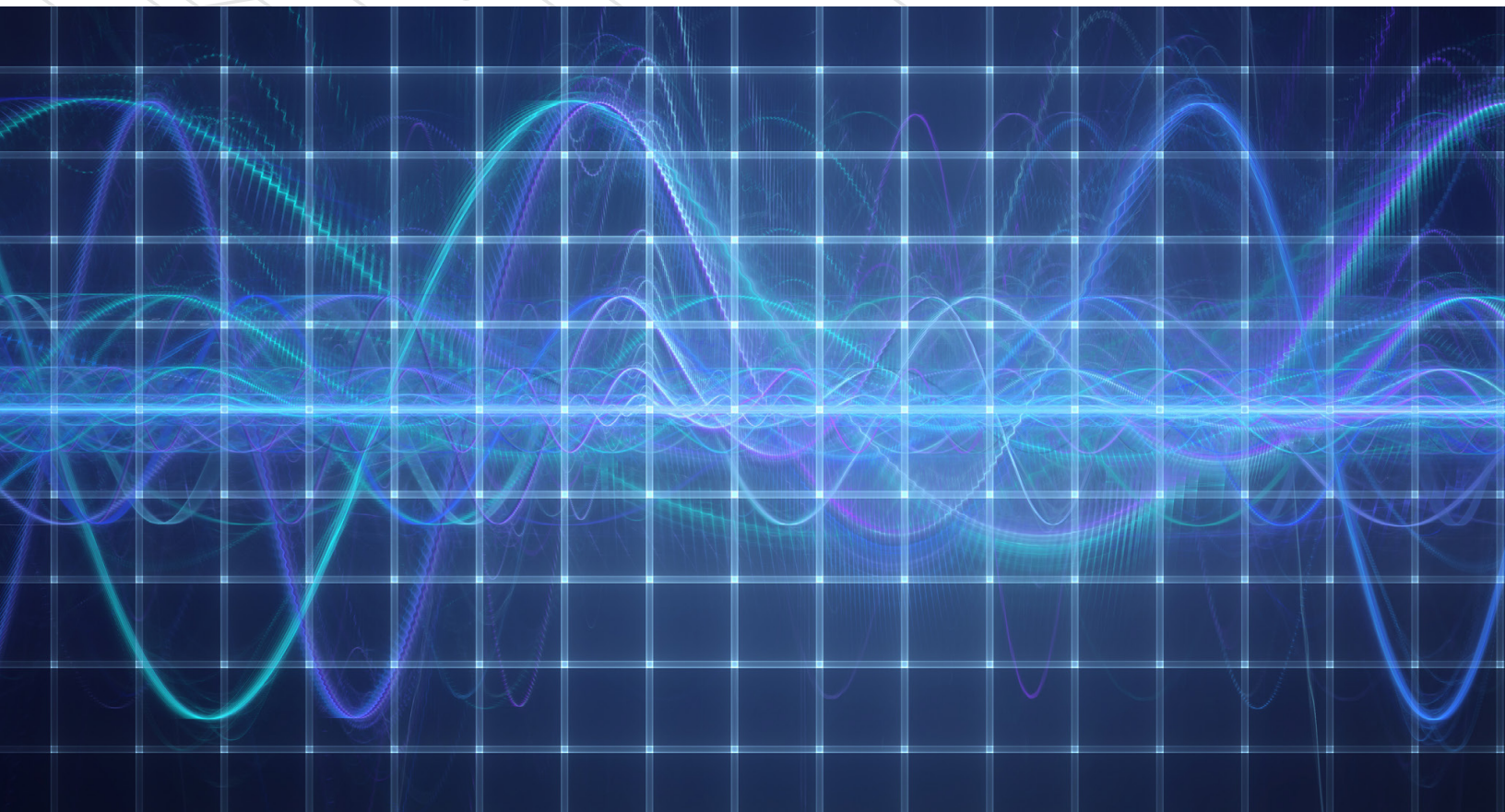


EMI Standards Applications & Limits

EN55011 • EN55022 • EN55015 • EN55032

SL Power Application Note AN-G006





OVERVIEW

This application note highlights the differences and applications of three popular emission governing standards: EN55011 for ISM, EN55022 ITE (EU standard EN55032:2012/AC:2013) and EN55015 Lighting equipment.

DIFFERENCES

- EN55011 is applicable to industrial, scientific and medical (ISM) equipment. It has two groups: Group 1 and Group 2. EN55011 Group 1 limits are identical to EN 55022 limits. EN55011 Group 2 is a little complicated, but basically the product must use RF as an output. Therefore, switch mode power supply is not considered in Group 2.
- EN55022 is applicable to information technology equipment (ITE). Note any product that is shipping into the EU after March 2, 2017 must comply to the requirements of EN55032:2012/AC:2013. The limits are the same as EN55022, but CE reports and documents must be reference tested to EN55032:2012/AC:2013 which is a harmonized standard for multimedia equipment and supersedes EN55022.

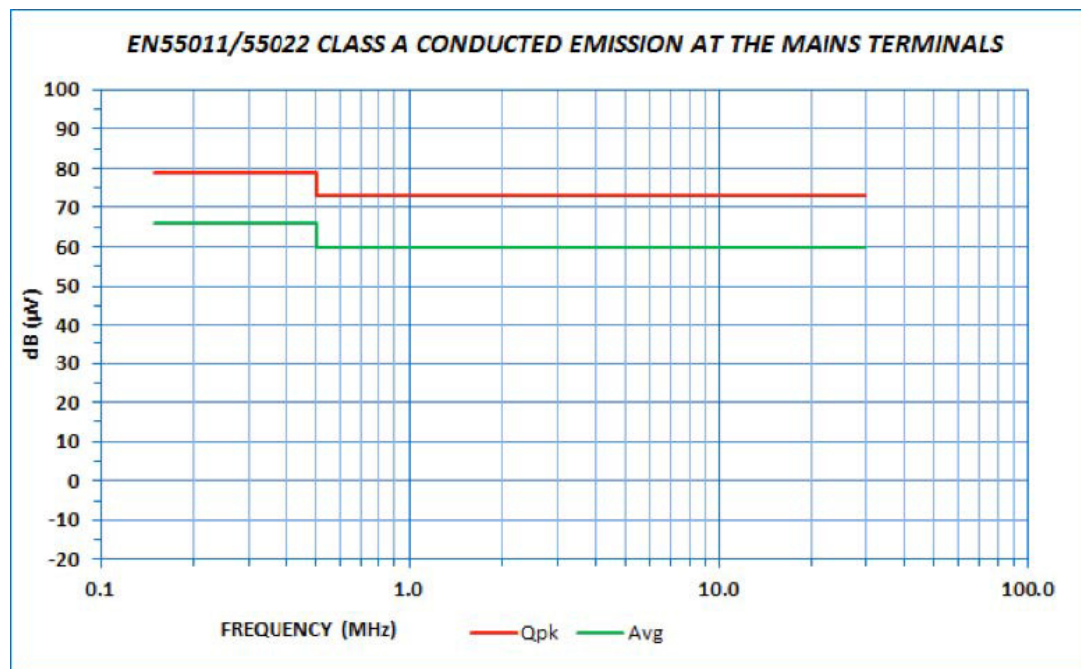
Both EN55011 and EN55022 contain two classes: Class A and Class B.

- Class A equipment that is used in a domestic environment may cause radio interference with other equipment in its vicinity.
- Class B equipment is designed to be used in a domestic environment and will not cause radio interference with other equipment in its vicinity.
- EN55015 is applicable to lighting equipment.

CONDUCTED DISTURBANCES

EN 55022 and EN 55011 (Group 1) measure the emissions from equipment in the frequency range of 150 kHz to 30 MHz, while EN 55015 measures the emission from equipment in the extended frequency range of 9 kHz to 30 MHz, by using a conducted measurement technique on the AC mains input cable. The conducted emission limits applied by these standards are intended to protect equipment connected to the same AC mains supply maintaining its proper operation.

Frequency Range (MHz)	EN55011 (Group 1)		EN55022		EN55015	
	Limit dB(μV)		Limit dB(μV)		Limit dB(μV)	
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0.15 to 0.50	79	66	79	66	Not Applicable	Not Applicable
0.5 to 30	73	60	73	60	Not Applicable	Not Applicable



Frequency Range (MHz)	EN55011 (Group 1)		EN55022		EN55015	
	Limit dB(µV)		Limit dB(µV)		Limit dB(µV)	
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0.009 to 0.05	NA	NA	NA	NA	110	NA
0.05 to 0.15	NA	NA	NA	NA	90 to 80	NA
0.15 to 0.50	66 to 56	56 to 46	66 to 56	56 to 46	66 to 56	56 to 46
0.5 to 5	56	46	56	46	56	46
5 to 30	60	50	60	50	60	50

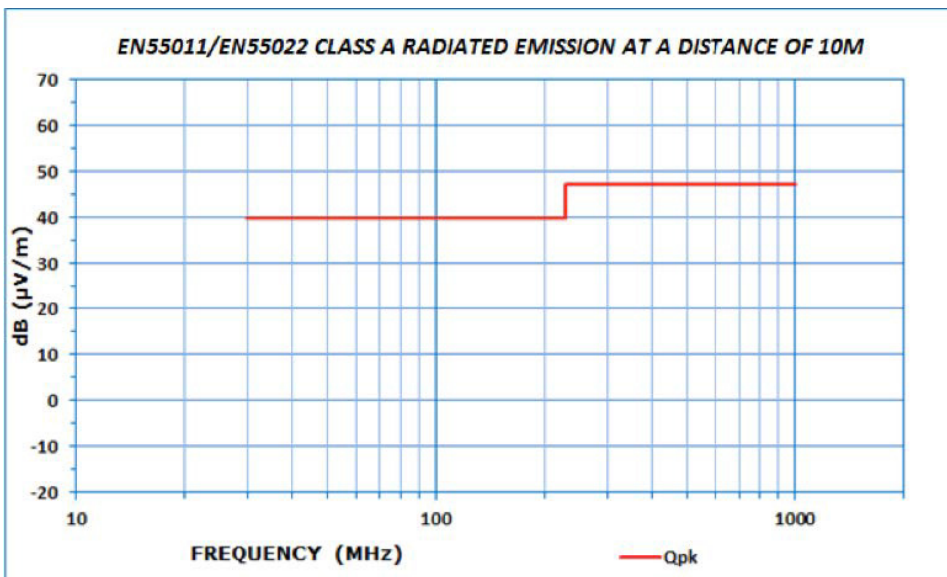




RADIATED DISTURBANCES

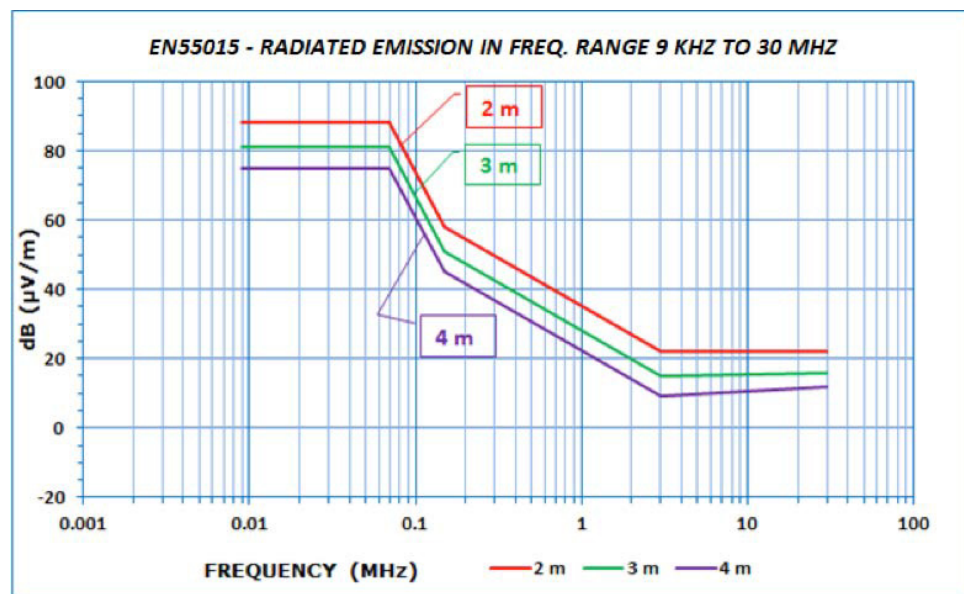
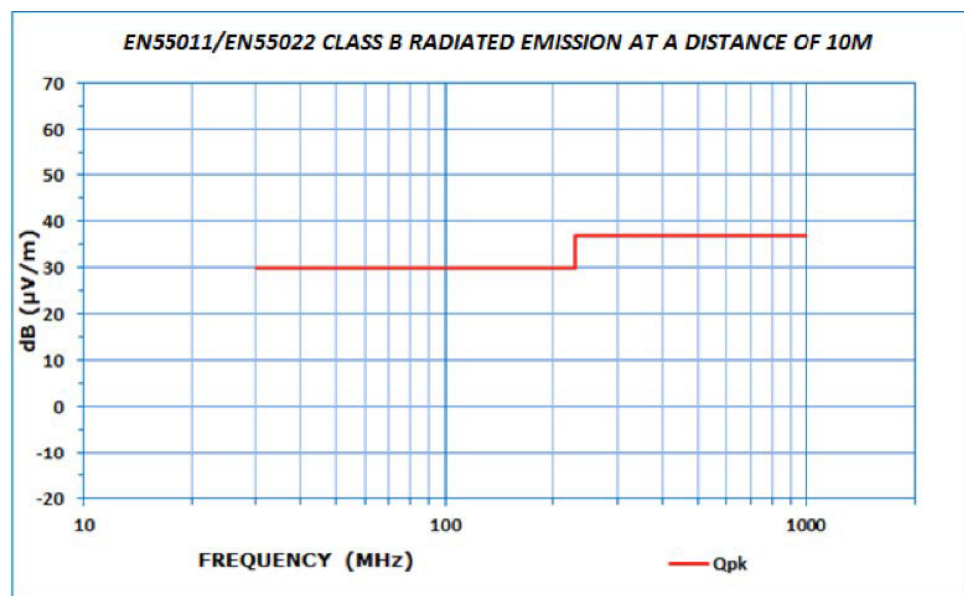
EN 55022 and EN 55011 (Group 1) measure the emissions from equipment in the frequency range 30MHz to 1000 MHz while EN 55015 measures the emission from equipment in the frequency range 30MHz to 300MHz by using a receiving antenna recording the OTA signals. The radiated emission limits applied by these standards are intended to protect equipment around its vicinity maintaining its proper operation.

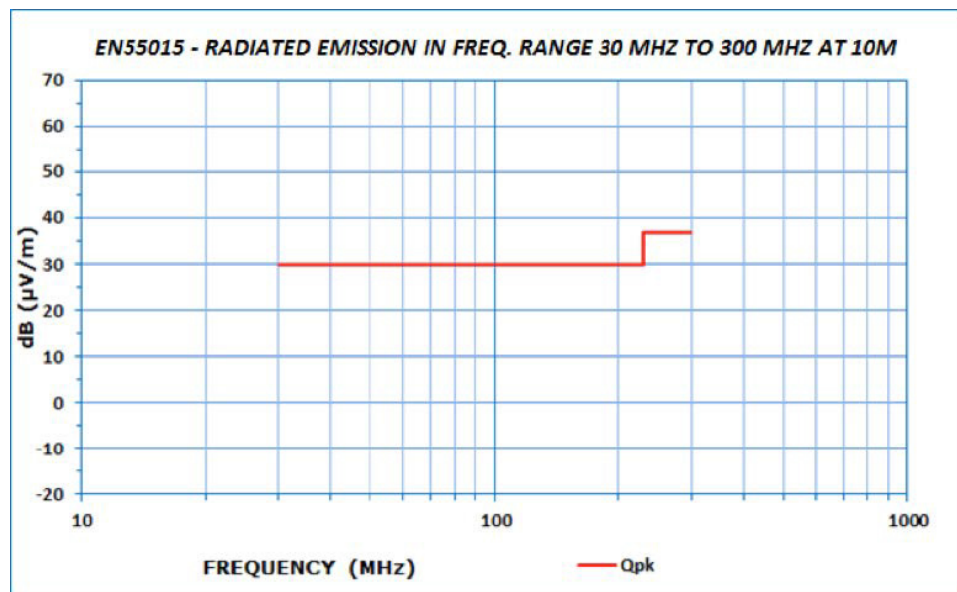
Frequency Range (MHz)	EN55011 (Group 1)		EN55022		EN55015		
	Limit dB(μV)		Limit dB(μV)		Limit dB(μV)		
	Quasi-peak limits		Quasi-peak limits		Quasi-peak limits		
	3m	10m	3m	10m	2m	3m	4m
30 to 230	50	40	50	40	NA	NA	NA
230 to 1000	57	47	57	47	NA	NA	NA





Frequency Range (MHz)	EN55011 (Group 1)		EN55022		EN55015			
	Limit dB(μ V)		Limit dB(μ V)		Limit dB(μ V)			
	Quasi-peak limits		Quasi-peak limits		Quasi-peak limits			
	3m	10m	3m	10m	2m	3m	4m	10m
0.009 to 0.07	NA	NA	NA	NA	88	81	75	NA
0.07 to 0.15	NA	NA	NA	NA	88 to 58	81 to 51	75 to 45	NA
0.15 to 3	NA	NA	NA	NA	58 to 22	51 to 15	45 to 9	NA
3 to 30	NA	NA	NA	NA	22	15 to 16	9 to 12	NA
30 to 230	40	30	40	30	NA	40	NA	30
230 to 1000(300*)	47	37	47	37	NA	47	NA	37







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