

Bajog electronic GmbH

der EMV - Spezialist



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Messbericht/ Test Report 07/01/21

EMV – Testlabor und Service
Zertifiziert DEKRA ITS ISO 9001:2015 und 14001
G 507 03 632 und G17 07 03 05 7

Eine auszugsweise Vervielfältigung dieses Berichtes ist ohne schriftliche Genehmigung der Firma Bajog electronic GmbH nicht gestattet. Die im Messbericht aufgeführten Prüfergebnisse beziehen sich ausschließlich

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auf den unten näher bezeichneten Prüfgegenstand. Eine Übertragung auf andere Systeme oder Konfigurationen ist nicht zulässig.

Bajog electronic ist kein EMV – zertifiziertes Messlabor und strebt dieses Ziel auch nicht an. Der nachfolgende Testbericht basiert auf der EN 55011...22 Vorschrift in Anlehnung an (EMV) CISPR 16 und CISPR 11 Vorschriften und dient zur praktischen Unterstützung ausschließlich für Kunden der Bajog electronic um Produktions– u. Prozess - Unterbrechungsursachen festzustellen und um diese schnell und wirtschaftlich zu beheben. Die Jahrzehnte lange Praxis von Bajog electronic bietet dazu die erforderliche Grundlage.

Ort der Messung: Pilsting

Datum der Messung: 07.01.2021

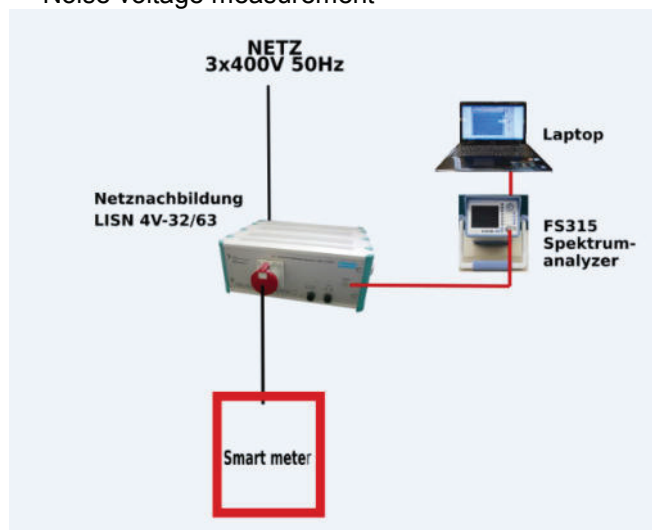
Auftraggeber: EMF Consult

Art der Prüfung: Elektrische Störspannungsmessung, Smart Meter Aidon 6525, Kamstrup Omnipower, Filter Nobo FPX35

Messgrundlage: EN 55011: + A1:1999
Funkstörungen – Grenzwerte und Messverfahren

Equipment: HP Network Analyzer 8753E ; Bajog MS-04 ; Bajog LISN 4V-32/63 ; Advantest Spectrum Analyzer R4131D

General schematics: Noise voltage measurement



The following table shows the current statutory limit values for interference voltages.

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The legal limit values only cover the range from 150 kHz. However, this does not mean that interference voltages below 150 kHz cannot cause damage. This frequency range is therefore also included in the interference voltage measurement.

The legal EN limit values only cover the range from 150 kHz - 30MHz (wired).

The high-energy interference voltages, spikes and transients are primarily generated in the range from 2KHz to > 150 KHz and fed into the network.

With the interference voltage measurement by Bajog electronic, this frequency range is therefore also included in the measurement and evaluation.

Störaussendung – Netzwechselstrom			
Frequenzbereich	Grenzwerte	Basisnorm	Bemerkung
0,15 bis 0,5 MHz	79 dB (µV) QP 66 dB (µV) AV	EN 55011 Klasse A Gr. 1	Industriebereich
0,5 bis 5 MHz	73 dB (µV) QP 60 dB (µV) AV		
5 bis 30 MHz	73 dB (µV) QP 60 dB (µV) AV		

Störaussendung – Netzwechselstrom			
Frequenzbereich	Grenzwerte	Basisnorm	Bemerkung
0,15 bis 0,5 MHz	66 dB (µV) QP 56 dB (µV) AV	EN 55011 Klasse B Gr. 1 u.2	Wohnbereich
0,5 bis 5 MHz	56 dB (µV) QP 46 dB (µV) AV		
5 bis 30 MHz	60 dB (µV) QP 50 dB (µV) AV		

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2. Messung an Smart Meter Kamstrup Omnipower, RF Transmission ON

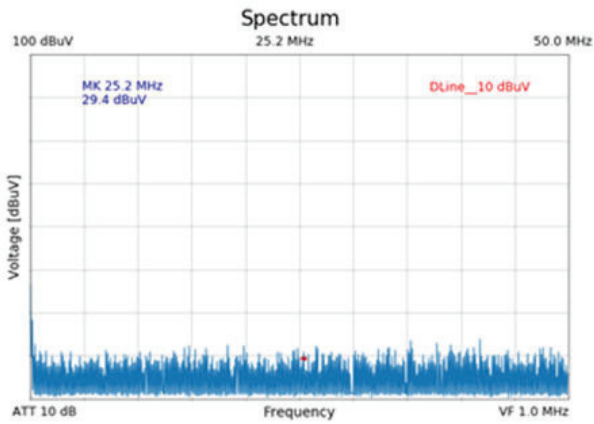


Abb. 4

L1 LISN output

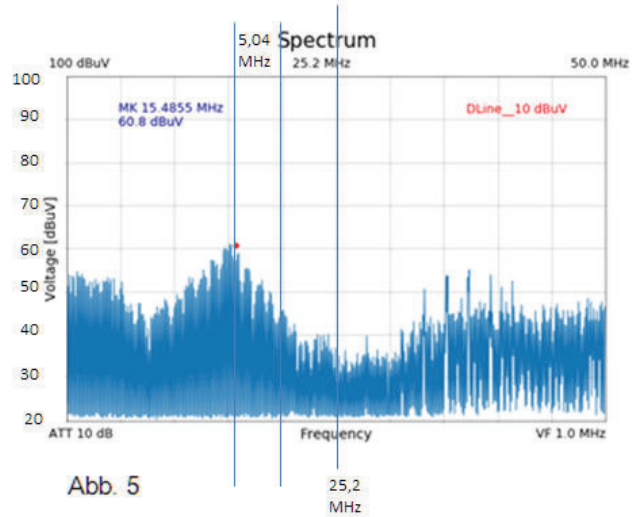


Abb. 5

L1 with Smart Meter

Result 1:

if the EN 55011 Class A Gr. 1 is used as a measurement basis, then there is no limit value violation.

Result 2:

if the EN 55011 Class B Gr. 1 u 2 is used as a measurement basis, then there is limit overdue of 0,8dBuV in the range of 15,485MHz

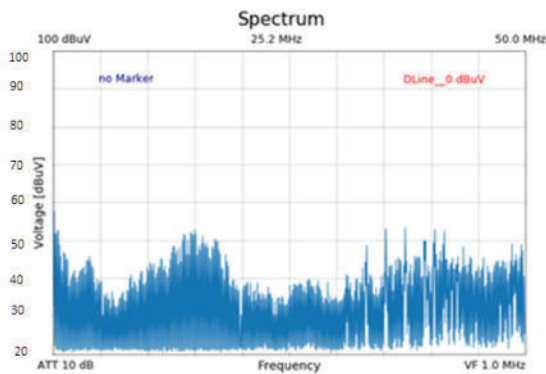


Abb. 6

L1 with Smart Meter and 20 Ferrites Cores

Result 3:

if the EN 55011 Class A Gr. 1 and EN 55011 Class B Gr. 1 u 2 is used as a measurement basis, then there is no limit value violation on L1.

The determined result does not change even if more than 20 ferrite cores are used

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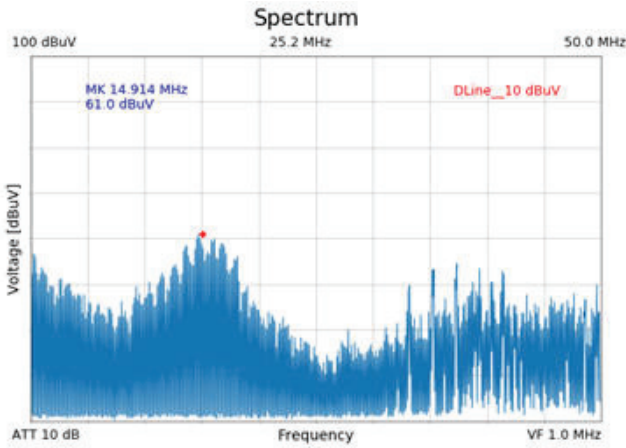


Abb. 8

L2 with Smart Meter

Result 4

if the EN 55011 Class A Gr. 1 is used as a measurement basis, then there is no limit value violation on L2.
 if the EN 55011 Class B Gr. 1 u 2 is used as a measurement basis, then there is limit overdue of 1,0 dB μ V in the range of 14,914MHz

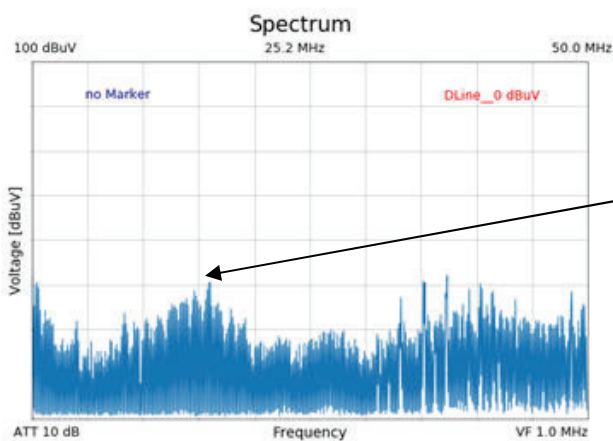


Abb. 9

L2 with Smart Meter and 20 Ferrites Cores

Scan - Details

Span X - Side is 5,04MHz Centre Frequenz 25,2MHz
 Span Y - Side is 10dB μ s

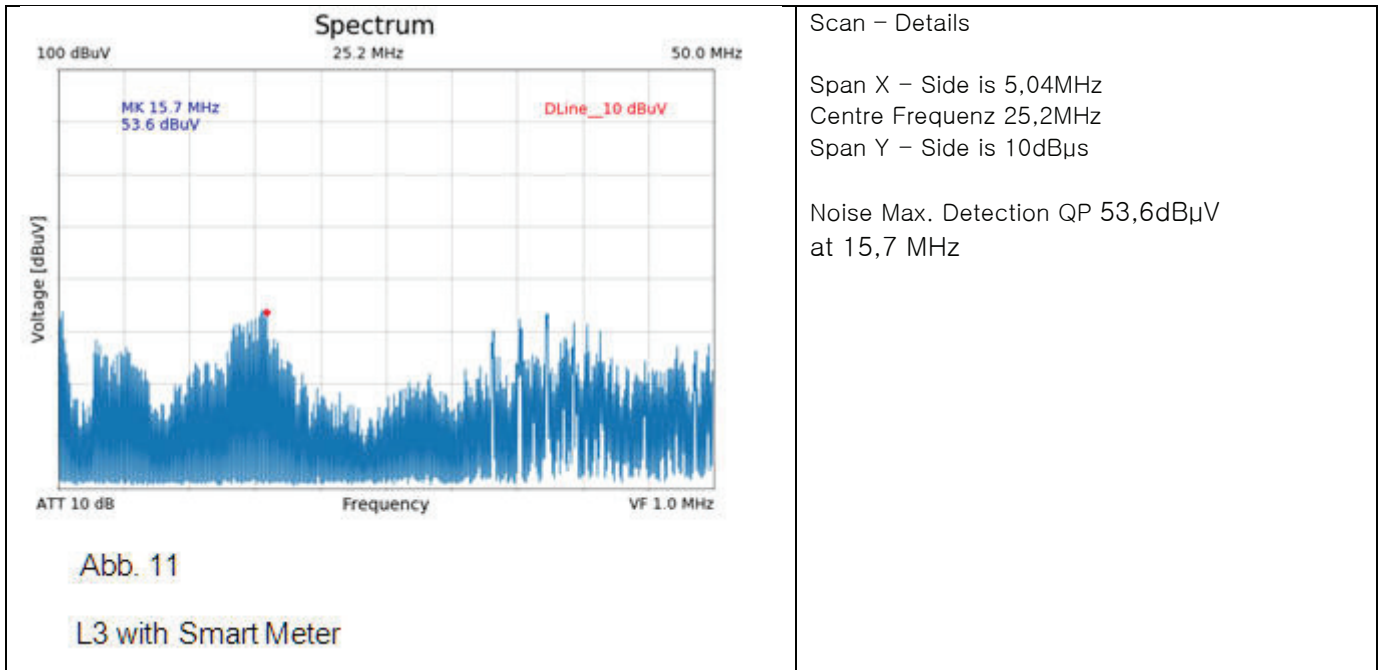
Noise Max. Detection QP 50,2dB μ V at 17,2 MHz

Result 5

if the EN 55011 Class A Gr. 1 and EN 55011 Class B Gr. 1 u 2 is used as a measurement basis, then there is no limit value violation on L2. The determined result does not change even if more than 20 ferrite cores are used

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Result 6

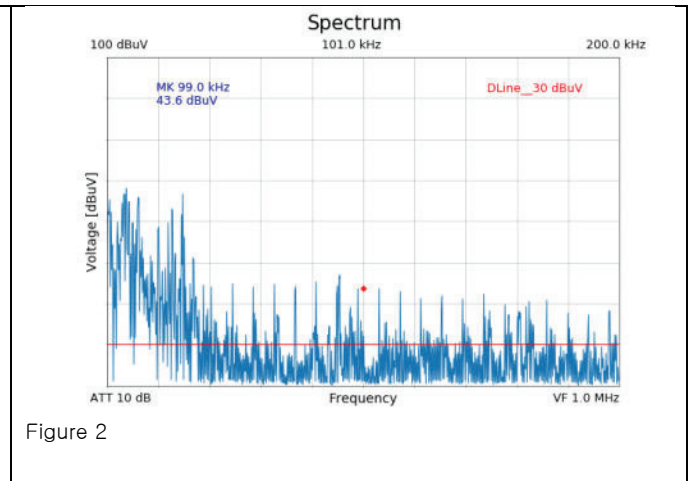
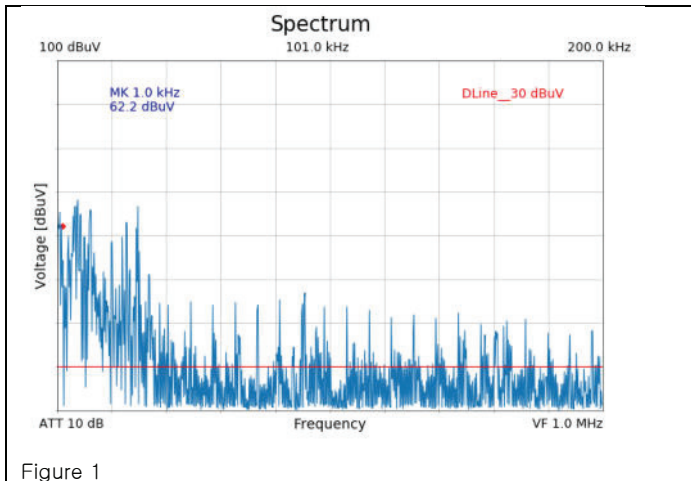
if the EN 55011 Class A Gr. 1 is used as a measurement basis, then there is no limit value violation on L3. Even if the EN 55011 Class B Gr. 1 u 2 is used as a measurement basis, then there also no limit overdue in the range of 15,5MHz

As a result of the measurements from 1- 6, there were no changes in curve (noise level) during the transmission mode



Appendix and explanation

Kamstrup Omnipower Low Frequency from 1 KHz – 200KHz



The measurement results of phases L1, L2 and L3 are identical and do not differ from one another. Therefore only phase L1 was documented.

In Figure 1 the marker is placed at 1,0KHz with 62,2dB μ V and in Figure 2 the marker is placed at 99KHz with 43,6dB μ V

If the EN 55011 Class A Gr. 1 and EN 55011 Class B Gr. 1 u 2 is used as a measurement basis, then there is no limit value violation on L1–L3 even N.

No ferrite cores were used in this measurement!

