EMC Test Protocol

Tester: Stolz

Client: Ahlmeier, Mr. Fritsch

Project No.: 7906 Sub project folder: IT1000

EUT: Dispenser for soap and foam disinfection fluid

Maximum internal clock frequency: 2 MHz

Power Supply: 100-240 V, 50/60 Hz, 0,3 A; 6,2 V sekundär
„Netzteil zu Spenderserie IT“ , Artikel Nr. 18092

Operation: stand-by and continuous pumping in multi-mode

Monitoring: power consumption, LED

Generic / Product standards:

EN 61000-6-1:2007 IEC 61000-6-1:2005	Electromagnetic compatibility (EMC) Part 6-1: Generic standards – Immunity for residential, commercial and light industrial environments
FprEN 61000-6-1:2015 IEC 77/487/CDV:2015	Electromagnetic compatibility (EMC) Part 6-1: Generic standards – Immunity for residential, commercial and light industrial environments
EN 61000-6-3:2007 + A1:2011 IEC 61000-6-3: 2006 + A1:2010	Electromagnetic compatibility (EMC) Part 6.3: Generic Standards – Emission standard for residential, commercial and light-industrial environments
EN 61000-6-3:2007/prA2:2016 IEC CIS/H/312/CDV:2016	Electromagnetic compatibility (EMC) Part 6.3: Generic Standards – Emission standard for residential, commercial and light-industrial environments

Date	Temperature	Atmospheric Pressure	Relative Humidity
11.03.2019	20 °C	1008 hPa(abs)	29 %

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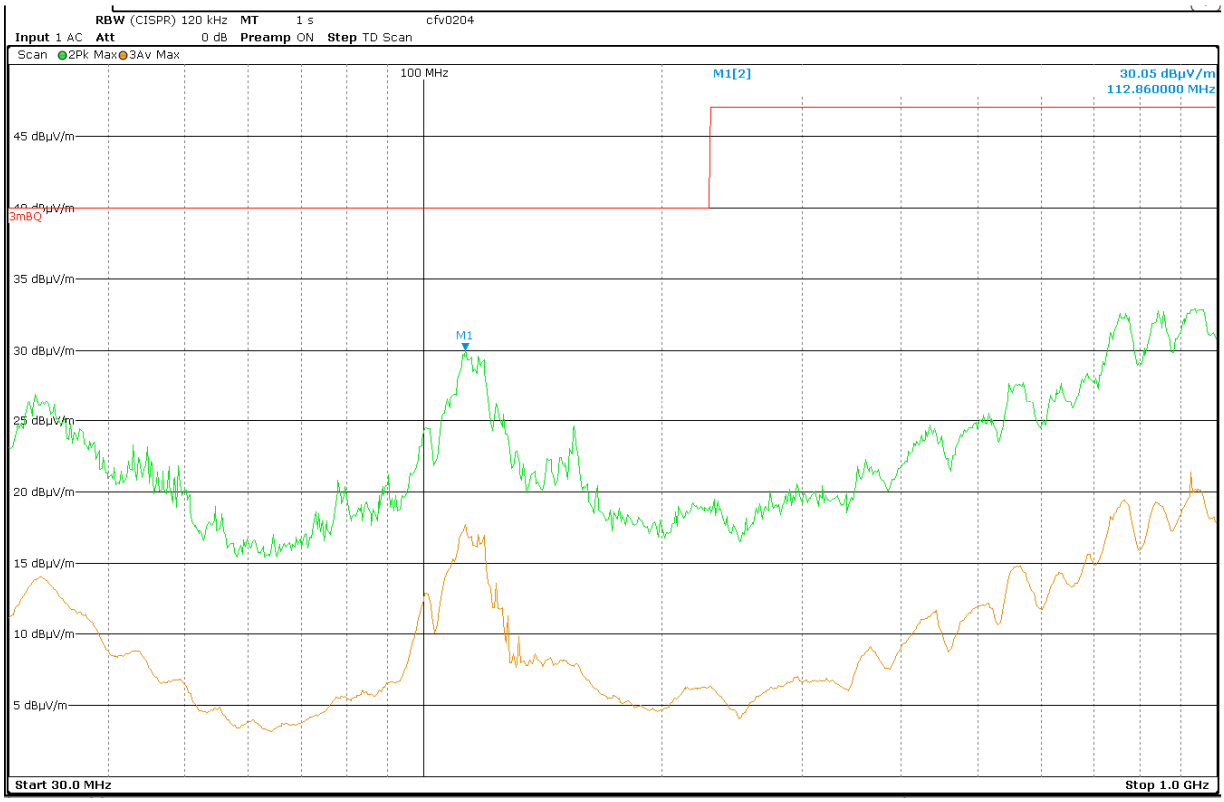
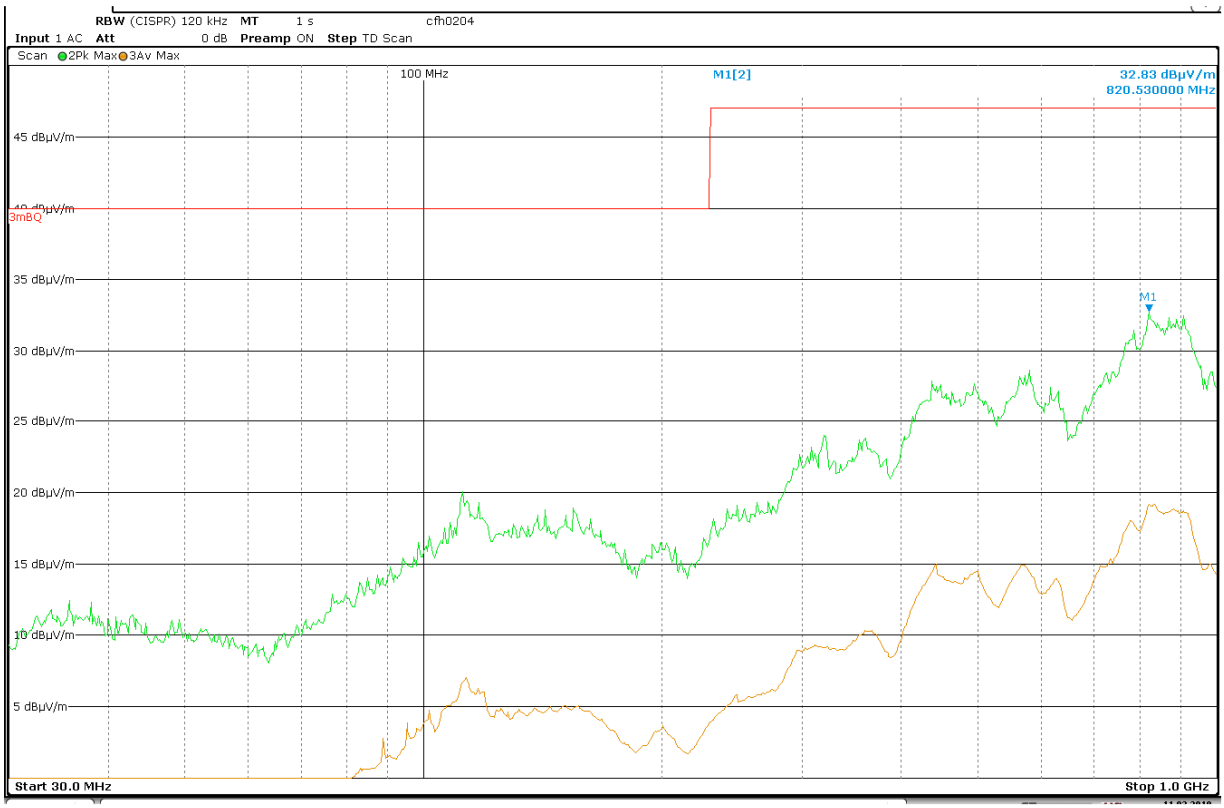
Radio Interference Field Strength Emission, DIN EN 55016-2-3

Test Equipment: Test Receiver ESR7, Antenna CBL6112B, Antenna distance: 3 m



19031101: IT1000, 30-1000 MHz, vertical, stand-by

Limits class B fulfilled



19031102: IT1000, 30-1000 MHz, horizontal, stand-by

Limits class B fulfilled

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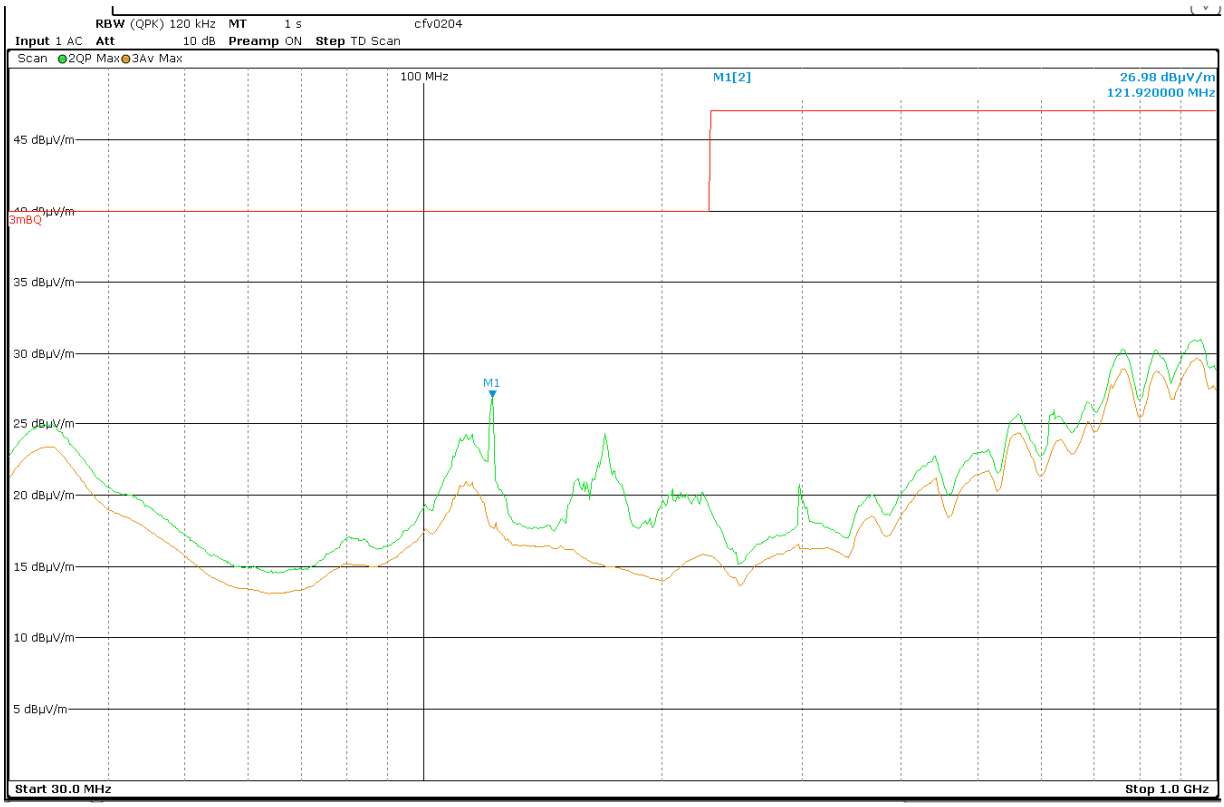
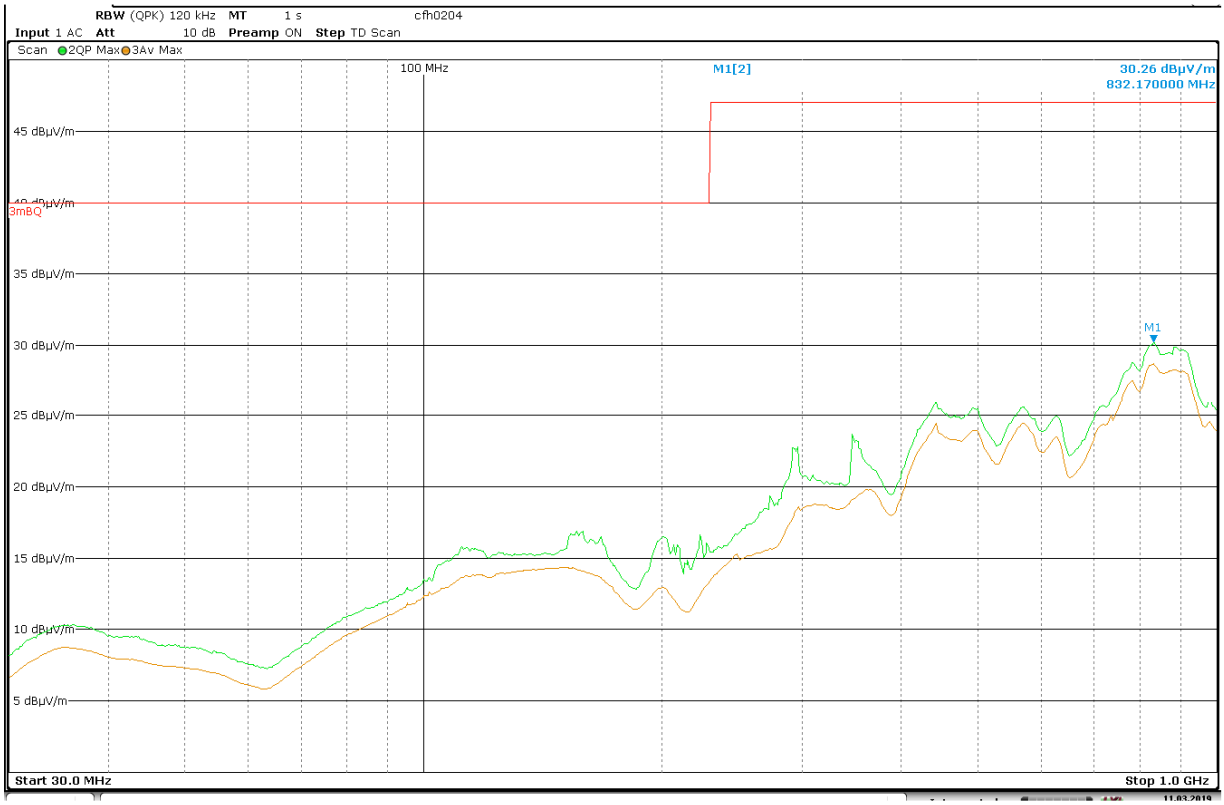


19031103: IT1000, 30-1000 MHz, vertical, pumping
Limits class B fulfilled



19031104: IT1000, 30-1000 MHz, horizontal, pumping
Limits class B fulfilled

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Harmonics Emission, DIN EN 61000-3-2

Test Equipment: Analyzer HFA 3000, Artificial Mains Rohrer PA 2061S

Not tested, power consumption below 15 mA

Voltage Fluctuations / Flicker Emission, DIN EN 61000-3-3

Test Equipment: Analyser HFA 3000, artificial mains Rohrer PA 2061S

Not tested, power consumption below 15 mA

Radiated Field Immunity, DIN EN 61000-4-3

80-1000 MHz, 3 V/m, 80 % AM 1 kHz, step 1 %, step time 0.5 s
Test Equipment: Signal generator SMB 100AS, Amplifier AR 200W1000M7,
Antenna AR AT 1080, Antenna distance: 2.0 m, Antenna height 1.6 m

No.	Polarisation	Angle	Requirement	Result
19031105	vertical	0°	3 V/m (A)	**4 V/m (A)**
19031106	vertical	90°	3 V/m (A)	**4 V/m (A)**
19031107	vertical	180°	3 V/m (A)	**4 V/m (A)**
19031108	vertical	270°	3 V/m (A)	**4 V/m (A)**
19031109	horizontal	270°	3 V/m (A)	**4 V/m (A)**
19031110	horizontal	180°	3 V/m (A)	**4 V/m (A)**
19031111	horizontal	90°	3 V/m (A)	**4 V/m (A)**
19031112	horizontal	0°	3 V/m (A)	**4 V/m (A)**

1-3 GHz, 10 V/m, 80 % AM 1 kHz, step 1 %, step time 0.5 s
Test Equipment: Signal generator SMB 100A, Amplifier OPHIR 5161F,
Antenna: Schwarzbeck BBHA 9120 E, Antenna distance: 1 m, Antenna height 1.05 m

No.	Field	Polarisation	Angle	Requirement	Result
19031113	B	vertical	0°	3 V/m (A)	**4 V/m (A)**
19031114	B	vertical	90°	3 V/m (A)	**4 V/m (A)**
19031115	B	vertical	180°	3 V/m (A)	**4 V/m (A)**
19031116	B	vertical	270°	3 V/m (A)	**4 V/m (A)**
19031117	B	horizontal	270°	3 V/m (A)	**4 V/m (A)**
19031118	B	horizontal	180°	3 V/m (A)	**4 V/m (A)**
19031119	B	horizontal	90°	3 V/m (A)	**4 V/m (A)**
19031120	B	horizontal	0°	3 V/m (A)	**4 V/m (A)**

2-6 GHz, 10 V/m, 80 % AM 1 kHz, step 1 %, step time 0,5 s
Test Equipment: Signal generator SMB 100A, Amplifier Prana AP32UX115,
Antenna: Schwarzbeck BBHA 9120 E, Antenna distance: 1 m, Antenna height 1.05 m

No.	Field	Polarisation	Angle	Requirement	Result
19031121	B	horizontal	0°	3 V/m (A)	**4 V/m (A)**
19031122	B	horizontal	90°	3 V/m (A)	**4 V/m (A)**

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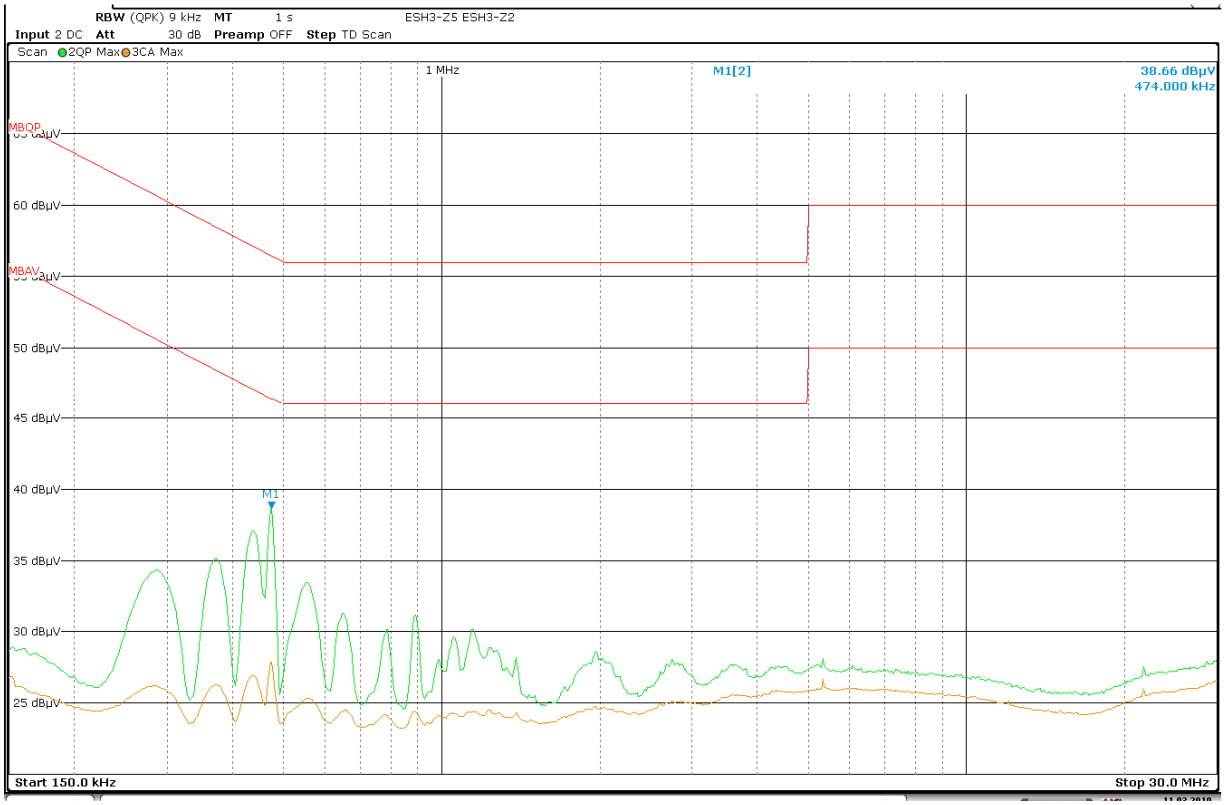
19031123	B	horizontal	180°	3 V/m (A)	**4 V/m (A)**
19031124	B	horizontal	270°	3 V/m (A)	**4 V/m (A)**
19031125	B	vertical	270°	3 V/m (A)	**4 V/m (A)**
19031126	B	vertical	180°	3 V/m (A)	**4 V/m (A)**
19031127	B	vertical	90°	3 V/m (A)	**4 V/m (A)**
19031128	B	vertical	0°	3 V/m (A)	**4 V/m (A)**

Radio Interference Voltage Emission, DIN EN 55016-2-1

Test Equipment: Test Receiver ESR7, Artificial Mains Network ESH3-Z5, Protector ESH-Z2



19031129: IT1000, 0.15-30 MHz, L and N, stand-by
Limits class B fulfilled

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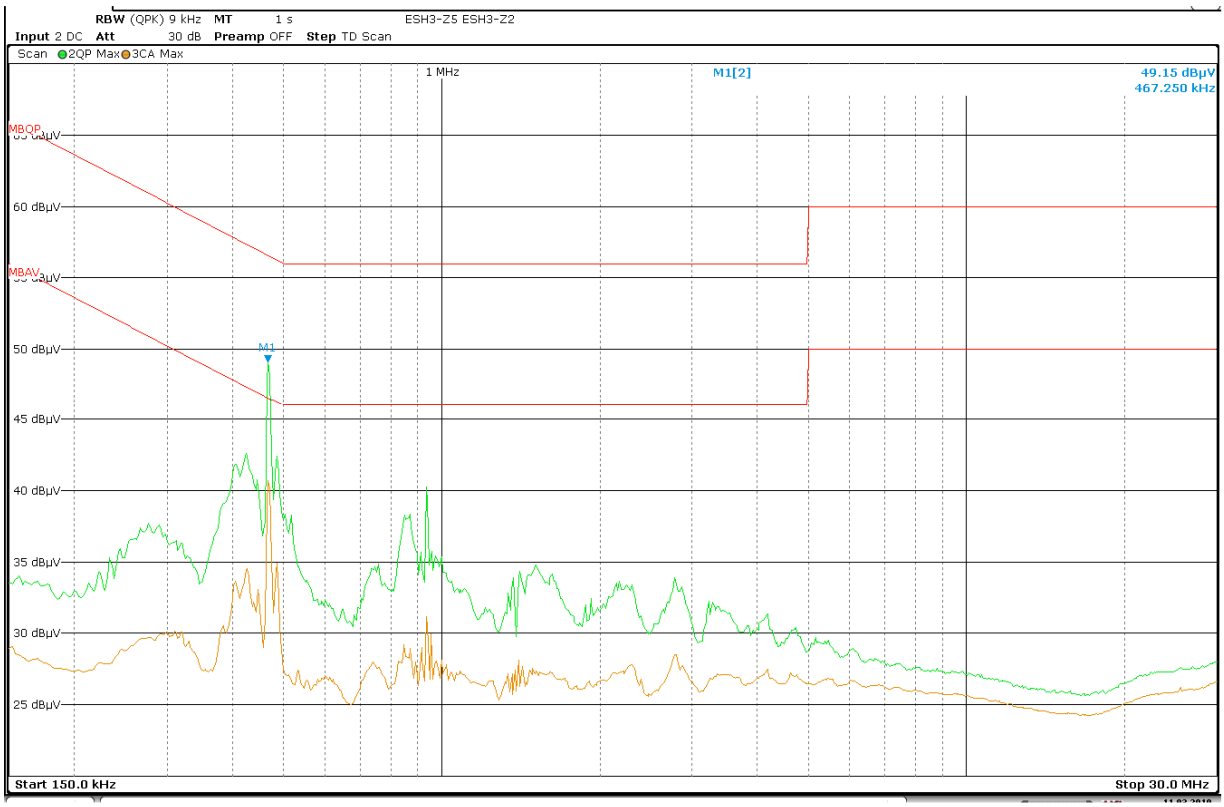

19031130: IT1000, 0.15-30 MHz, L and N, pumping
Limits class B fulfilled

Conducted Disturbances Immunity, DIN EN 61000-4-6

0,15-80 MHz, 10 V, 80 % AM 1 kHz, step 1 %, step time 0.5 s
Test Equipment: Signal generator SMB 100A, Amplifier AR 25A250, 6 dB attenuator TEXSCAN

No.	Interface	Coupling	Termination	Requirement	Result
19031131	AC supply	M3	without	3 V (A)	**10 V (A)**

Magnetic Field Immunity DIN EN 61000-4-8

Test Equipment: Rohrer PA 2061S, test coil w=100, d = 1 m

No magnetic sensitive elements inside

Burst, DIN EN 61000-4-4

Test Equipment: Burst-Generator Schlöder SFT1400-1, coupling clamp Micafil, coupling network FP 16-3/1

Interface	Coupling	Requirement	Result
AC supply	Network	1 kV (B)	**1 kV (A)**

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Voltage Dips, Short Interruptions, DIN EN 61000-4-11

Test Equipment: Electronic Switching Unit NUS 4-100

Interface	Mains Voltage	Test Voltage	Requirement	Result
AC supply	100 V, 240 V	0 %	10 ms (B)	**10 ms (A)**
		0 %	20 ms (B)	**20 ms (A)**
		70 %	500 ms (C)	**500 ms (A)**
		0 %	5 s (C)	**5 s (B)**
(B) Restart to pumping				

ESD, DIN EN 61000-4-2

Test Equipment: ESD-Generator Schaffner NSG435

Test point	Type of discharge	Requirement	Result
HCP EuT and Power supply	Contact	4 kV (B)	**4 kV (B)**
VCP, EuT and Power supply	Contact	4 kV (B)	**4 kV (B)**
Housing, Sensor	Air	8 kV (B)	2 kV (B), 4 kV (B), **8 kV (B)**
Housing power supply Front panel,	Air	8 kV (B)	2 kV (B), 4 kV (B), **8 kV (B)**
Terminals	Air	8 kV (B)	not touchable
(B) restart after about 3 s Tested on mounting plate and without mounting plate laying on Ground plane during stand-by			

Surge, DIN EN 61000-4-5

Test Equipment: Surge-Generator CWG 4-100 with coupling network CDN404,
external network 42 Ω - 0,5 µF

Interface	Coupling	Requirement	Result
L, N // PE	12 Ohm	2 kV (B)	not tested yet
L / N	2 Ohm	1 kV (B)	0,5 kV (A), **1 kV (C)**
(C) power supply defect			

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Date	Temperature	Atmospheric Pressure	Relative Humidity
09.05.2019	20 °C	988 hPa(abs)	36 %

New power supply:

Surge, DIN EN 61000-4-5

Test Equipment: Surge-Generator IMU 1000,

Interface	Coupling	Requirement	Result
L, N // PE	12 Ohm	2 kV (B)	**2 kV (A)**
L / N	2 Ohm	1 kV (B)	**1 kV (A)**

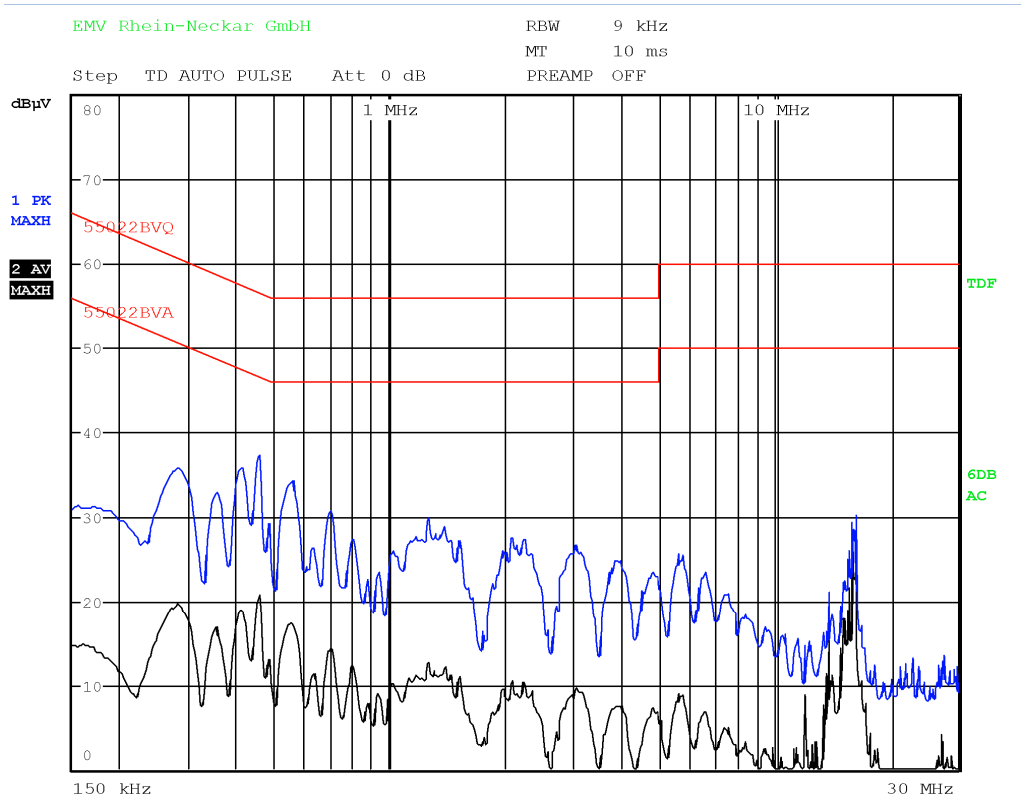
Burst, DIN EN 61000-4-4

Test Equipment: Burst-Generator IMU 1000

Interface	Coupling	Requirement	Result
AC supply	Network	1 kV (B)	**1 kV (A)**

Radio Interference Voltage Emission, DIN EN 55016-2-1

Test Equipment: Test Receiver ESU8, Artificial Mains Network ESH3-Z5,



19050901: IT1000, 0.15-30 MHz, L and N, stand-by
Limits class B fulfilled

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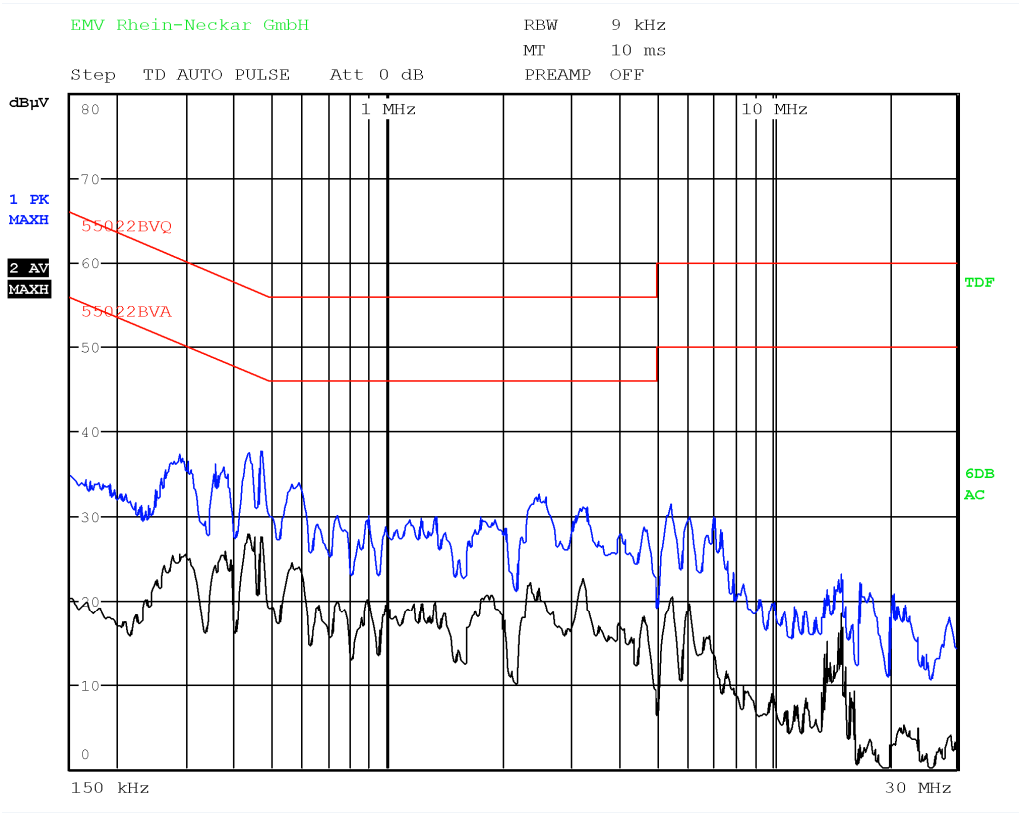

19050902: IT1000, 0,15-30 MHz, L and N, pumping
Limits class B fulfilled

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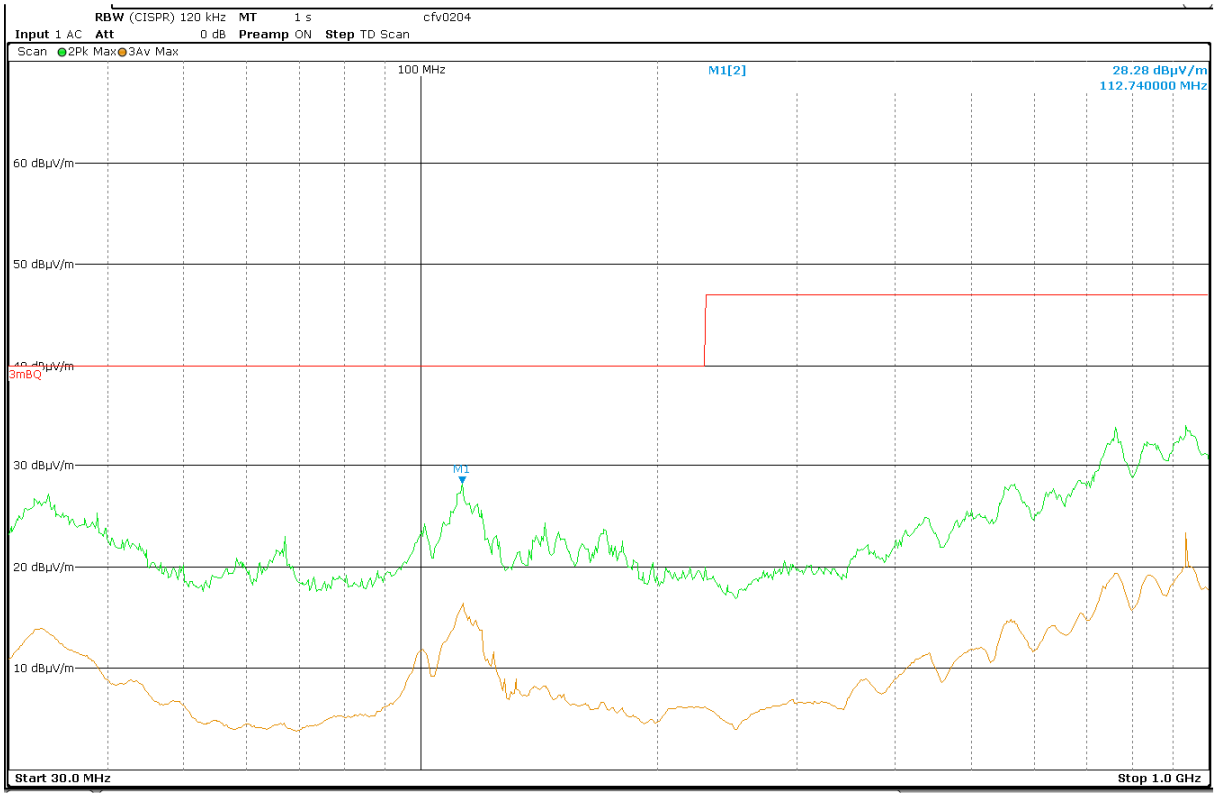
Date	Temperature	Atmospheric Pressure	Relative Humidity
10.05.2019	20 °C	998 hPa(abs)	38 %

New power supply:

Radio Interference Field Strength Emission, DIN EN 55016-2-3

Test Equipment: Test Receiver ESR7, Antenna CBL6112B, Antenna distance: 3 m



19051002: IT1000, 30-1000 MHz, vertical, stand-by

Limits class B fulfilled

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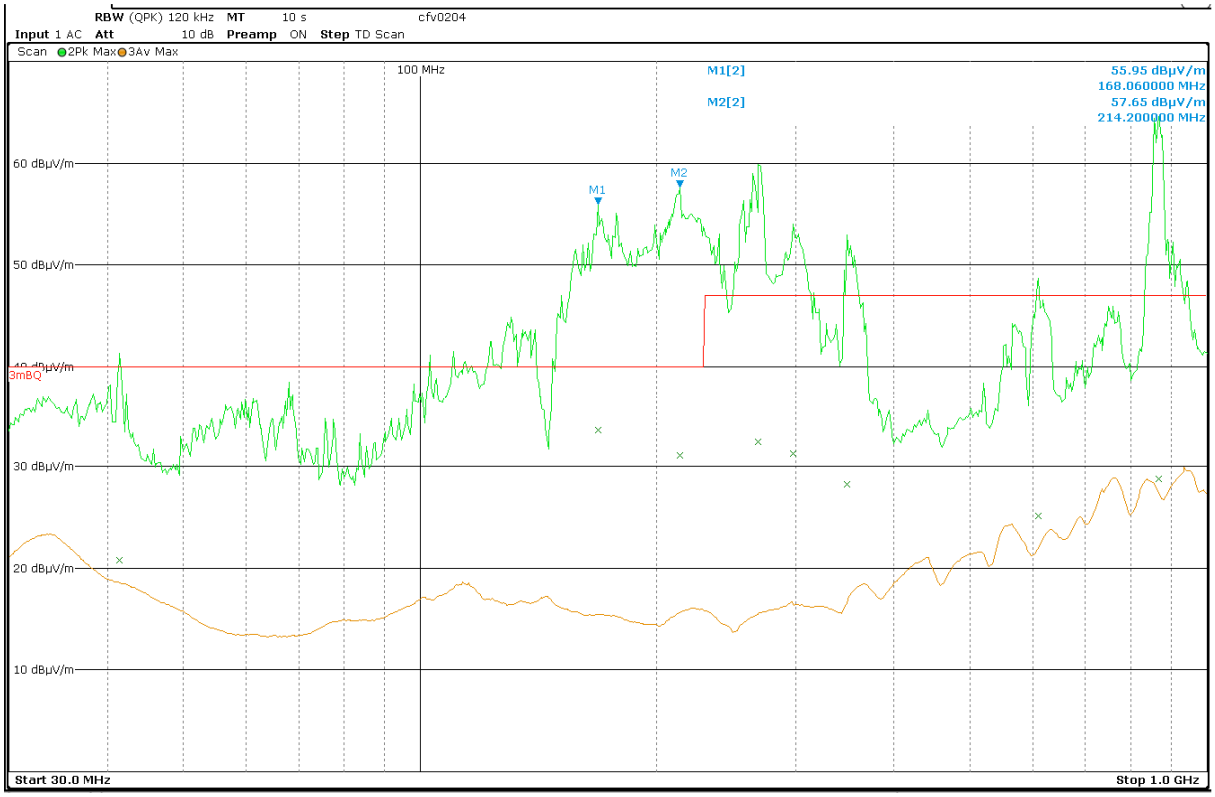
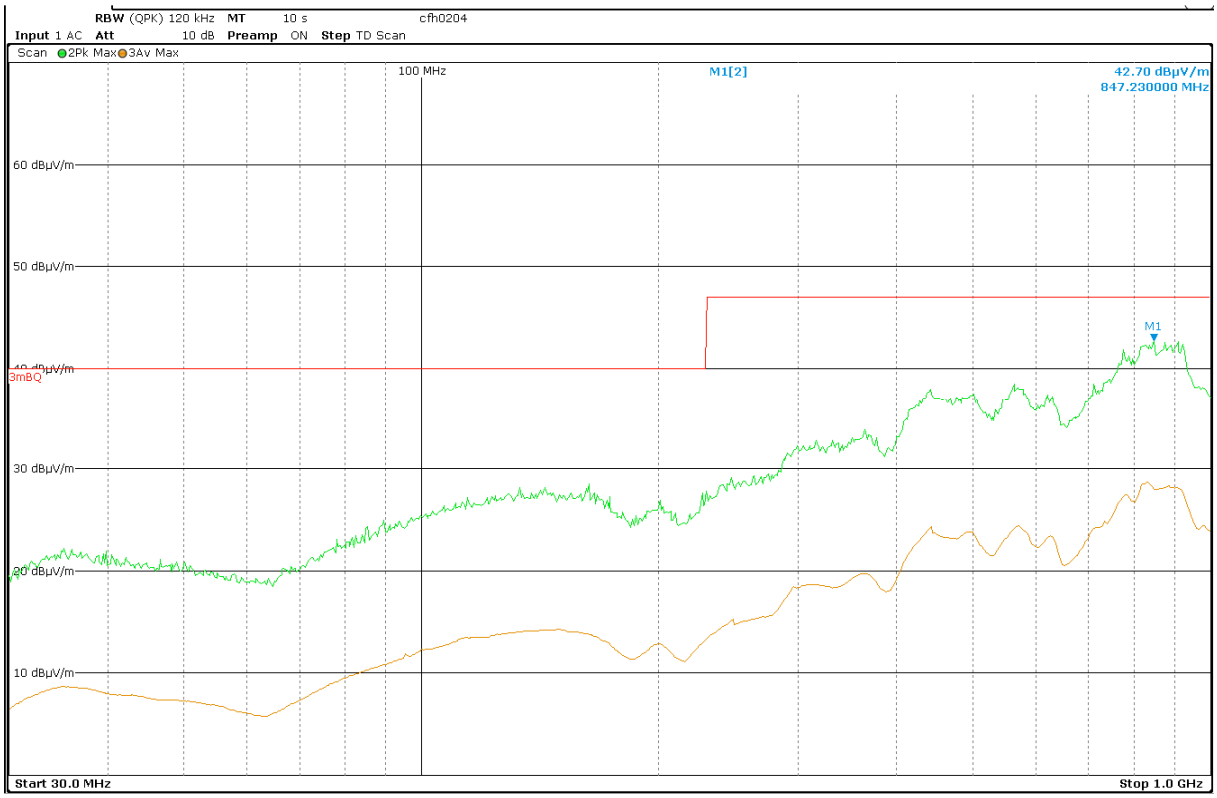


19051003: IT1000, 30-1000 MHz, vertical, pumping
41.5 MHz: 20.8 dB(µV/m) at 0 °Position Turntable, 19.2 dB below limit class B
168.1 MHz: 33.5 dB(µV/m) at 23 °Position Turntable, 6.5 dB below limit class B
214.2 MHz: 31.1 dB(µV/m) at 142 °Position Turntable, 8.9 dB below limit class B
269.1 MHz: 32.4 dB(µV/m) at 152 °Position Turntable, 14.6 dB below limit class B
298.1 MHz: 31.2 dB(µV/m) at 159 °Position Turntable, 15.8 dB below limit class B
349 MHz: 28.2 dB(µV/m) at 326 °Position Turntable, 18.8 dB below limit class B
610.8 MHz: 25.1 dB(µV/m) at 330 °Position Turntable, 21.9 dB below limit class B
868.1 MHz: 28.8 dB(µV/m) at 354 °Position Turntable, 18.2 dB below limit class B
Limits class B fulfilled



19051004: IT1000, 30-1000 MHz, horizontal, stand-by
Limits class B fulfilled

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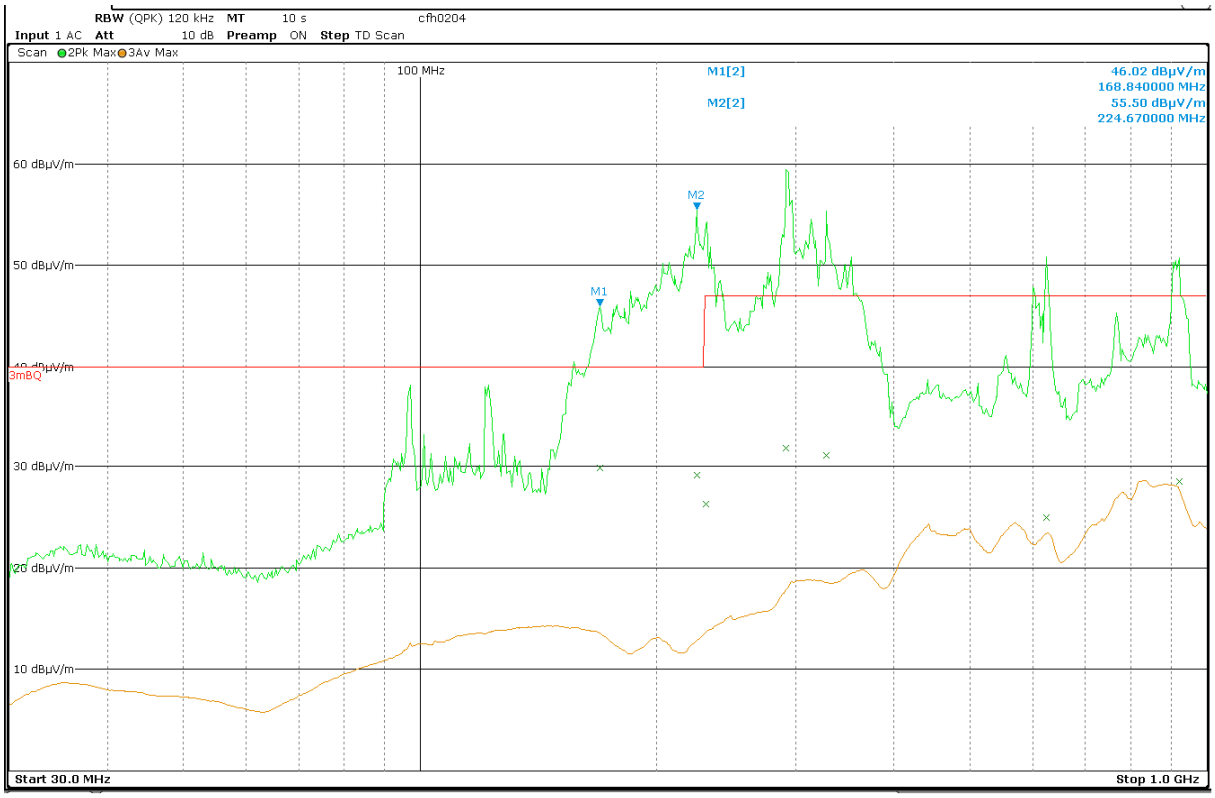

19051005: IT1000, 30-1000 MHz, horizontal, pumping
168.8 MHz: 29.9 dB(µV/m) at 76 °Position Turntable, 10.1 dB below limit class B
224.7 MHz: 29.2 dB(µV/m) at 236 °Position Turntable, 10.8 dB below limit class B
230.7 MHz: 26.3 dB(µV/m) at 308 °Position Turntable, 20.7 dB below limit class B
291.8 MHz: 37.8 dB(µV/m) at 228 °Position Turntable, 9.2 dB below limit class B
328.6 MHz: 31.1 dB(µV/m) at 35 °Position Turntable, 15.9 dB below limit class B
624.7 MHz: 25.0 dB(µV/m) at 320 °Position Turntable, 22.0 dB below limit class B
922.7 MHz: 28.5 dB(µV/m) at 25 °Position Turntable, 18.5 dB below limit class B
Limits class B fulfilled

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