

TEST REPORT
of the accredited test laboratory

TÜV Nr.:M/EMV-02/253

about
the following EMC - test/- research

Division Medical
Technology/
Communication
Technology/ EMC

Testing Body for
Communication
Technology/ EMC

Prüfzentrum Wien
A-1230 Wien
Deutschstraße 10

Tel: +43 1 / 610 91
Fax: Ext. 6505
Mail: office@tuev.or.at

Applicant: Corinex Global Corp.
308 1168 Hamilton Street
Vancouver, B.C., V6B 2S2; Canada

Product: Corinex Intelligent PowerNet Ethernet Adapter
FCC-ID: QIU POWERNET-ETH

Accredited Testing
Laboratory,
Inspection Body,
Certification Body,
Calibration Body

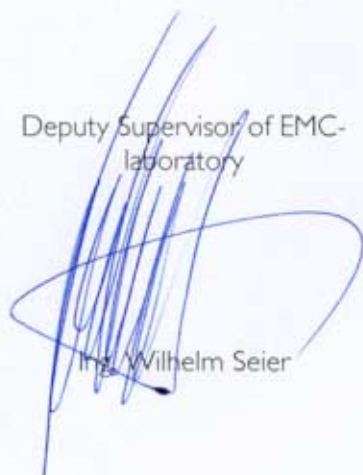
Notified Body 0408

Serial Number: ---

Standard: CISPR 22:1997

TÜV Österreich
Test laboratory for EMC

Deputy Supervisor of EMC-
laboratory


Ing. Wilhelm Seier



09. 10. 2002

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Checked by


Ing. Klaus Röttsch

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The results of this test report only refer to the provided equipment.

Contents

	Designation	page
1.	Applicant	3
2.	Description of EUT	4
3.	Standards / Final result	5
4.	Test results	6-14
Appendix	Designation	Pages
1	Test equipment used	3
2	Photodocumentation	16
3	Measurement diagrams	4

1. Applicant

Company	Corinex Global Corp.
Department	
Address	# 308 1168 Hamilton Street Vancouver, B.C., V6B 2S2 Canada
Contact person	Mr. Pavel Simon

EUT received on Oct. 1st 2002

Tests were performed on Oct. 4th and Oct. 8th 2002

2. Description of EUT

EUT	Corinex Intelligent PowerNet Ethernet Adapter FCC-ID: QIU POWERNET-ETH
Serial Number	---
Manufacturer	Corinex Global Corp. # 308 1168 Hamilton Street Vancouver, B.C., V6B 2S2 Canada
Description	Corinex Global Corp. provided the following configuration for the measurements: Ethernet-Powernetadapter Connected via LAN cable to a notebook computer working as data server and through the powerline to a second notebook computer where data were sent to.
Operating mode	The measurements were carried out at the following running states: transmit/receive data

3. Standards / Final result

Name	Title	Deviation	Result
CISPR 22:1997	Limits and methods of measurement of radio disturbance characteristics of information technology equipment	none	PASS
PASS EUT passed FAIL EUT failed			

4. Test results

4.1. Conducted emission on the AC mains supply line

Limits

Frequency range	Limit	
Detector	Quasi Peak	Average
0,150 - 0,5 MHz	66 - 56 dB μ V decreasing with the logarithm of frequency	56 - 46 dB μ V decreasing with the logarithm of frequency
0,5 - 5 MHz	56 dB μ V	46 dB μ V
5 - 30 MHz	60 dB μ V	50 dB μ V
Remark:	Quasi Peak and Average limits must be both met	

Measuring apparatus parameters:

Parameter	Preview measurement	Final measurement	Parameter	Preview measurement	Final measurement
Start frequency	150 kHz	150 kHz	Detector	MP/AV	QP/AV
Stop frequency	30 MHz	30 MHz	Measuring time	10 ms	1 s
Stepsize	5 kHz	5 kHz	RF-attenuation	0dB	0dB
IF- Bandwidth	9 kHz	9 kHz	Preamplifier	0 dB	0 dB

Operating mode	Measuring result
transmit/receive data	Measurement diagram 1

Test result:

4. 1.1.) Measurement with QP-Detector

Frequency MHz	Level dB μ V	Limit dB μ V	Margin dB	Exceed- Mark	Phase	PE
4,480	49,4	56,0	6,6		N	GND
4,690	48,4	56,0	7,6		N	GND
4,890	17,1	56,0	38,9		L1	GND
17,585	49,7	60,0	10,3		L1	GND
20,515	51,4	60,0	8,6		N	GND
20,700	50,8	60,0	9,2		N	GND

4. 1.2.) Measurement with AV-Detector

Frequency MHz	Level dB μ V	Limit dB μ V	Margin dB	Exceed- Mark	Phase	PE
4,485	38,1	46,0	7,9		L1	GND
4,510	36,1	46,0	9,9		N	GND
4,685	37,3	46,0	8,7		L1	GND
4,875	37,0	46,0	9,0		L1	GND
19,140	38,2	50,0	11,8		L1	GND
20,710	38,1	50,0	11,9		L1	GND

4. 2. Conducted emission on the LAN line

Limits

Frequency range	Limit	
Detector	Quasi Peak	Average
0,150 - 0,5 MHz	40 - 30 dB μ A decreasing with the logarithm of frequency	30 - 20 dB μ A decreasing with the logarithm of frequency
0,5 - 30 MHz	30 dB μ A	20 dB μ A
Remark: Quasi Peak and Average limits must be both met		

Measuring apparatus parameters:

Parameter	Preview measurement	Final measurement	Parameter	Preview measurement	Final measurement
Start frequency	150 kHz	150 kHz	Detector	MP/AV	QP/AV
Stop frequency	30 MHz	30 MHz	Measuring time	10 ms	1 s
Stepsize	5 kHz	5 kHz	RF-attenuation	0dB	0dB
IF- Bandwidth	9 kHz	9 kHz	Preamplifier	0 dB	0 dB

Operating mode	Measuring result
transmit/receive data	Measurement diagram 2

Test result:

4. 2.1.) Measurement with QP-Detector

Due to the large margin of the pre-scan results to the limit no final measurements were performed.

4. 2.2.) Measurement with AV-Detector

Due to the large margin of the pre-scan results to the limit no final measurements were performed.

4.3. Radiated emission

Limits :

Frequency range	Limit (quasi peak)
30 - 230 MHz	39,6 dB μ V/m
230 - 1000 MHz	46,6 dB μ V/m

Measuring apparatus parameters:

Parameter	Preview measurement	Final measurement	Parameter	Preview measurement	Final measurement
Start frequency	30 MHz	30 MHz	Detector	Max Peak	Quasi Peak
Stop frequency	1000 MHz	1000 MHz	Measuring time	10 ms	1 s
Stepsize	50 kHz	50 kHz	RF-attenuation	0dB	0dB
IF- Bandwidth	120 kHz	120 kHz	Preamplifier	20 dB	20 dB

Operating mode	Measuring result
transmit/receive data	Measurement diagram 3, 4

Test result:

4. 2.1.) Measurement with QP-Detector (30 MHz - 200 MHz)

Frequency MHz	Level dB μ V/m	Limit dB μ V/m	Margin dB	Exceed- Mark	Height cm	Azimuth deg	Polarization
36,15	26,6	39,6	13,0		104	89	VERTICAL
46,1	30,7	39,6	8,9		124	149	VERTICAL
55,30	32,6	39,6	7,0		100	29	VERTICAL
57,15	31,9	39,6	7,7		104	270	VERTICAL
71,90	28,9	39,6	10,7		100	350	VERTICAL
79,30	27,9	39,6	11,7		120	149	VERTICAL

4. 2.2.) Measurement with QP-Detector (200 MHz - 1000 MHz)

Frequency MHz	Level dB μ V/m	Limit dB μ V/m	Margin dB	Exceed- Mark	Height cm	Azimuth deg	Polarization
450,00	35,4	46,6	11,2		104	74	HORIZONTAL
500,00	44,8	46,6	1,8		239	20	HORIZONTAL
700,05	31,6	46,6	15,0		173	135	VERTICAL
900,00	31,2	46,6	15,4		172	29	HORIZONTAL
950,05	38,0	46,6	8,6		114	359	HORIZONTAL
1000,0	38,1	46,6	8,5		100	38	HORIZONTAL

Appendix 1

Test equipment used

☒	Anechoic Chamber with 3m measurement distance	NT-100	☐	ESPC - Test receiver 9 kHz - 2,5 GHz	NT-203
☒	MA 240 - Antenna mast 1 - 4 m height	NT-110	☒	ESI26 - Test receiver 20 Hz - 26,5 GHz	NT-207
☒	DS 412 - Turntable 0 - 400 ° Azimuth	NT-111	☐	Digital Radio Tester CTS55	NT-208
☒	HD 100 Controller Mast+Turntable	NT-112	☐	Noise-gen., ITU-R 559-2 20 Hz - 20 kHz	NT-209
☐	HUF-Z2 - Bicon. Antennna 20 - 300 MHz	NT-120	☐	CMTA - Radiocommunication analyzer ; 0,1 - 1000 MHz	NT-210
☐	HUF-Z3 - Log. Per. Antenna 200 - 1000 MHz	NT-121	☐	3271 - Spectrum analyzer 100 Hz - 26,5 GHz	NT-211
☐	HFH-Z2 - Loop Antenna. 9 kHz - 30 MHz	NT-122	☐	Radiocommunicationanalyzer Marconi 2945A	NT-212
☐	HFH-Z6 - Rod Antenna 9 kHz - 30 MHz	NT-123	☐	2855S - Communication analyzer	NT-213
☐	3121C - Dipole Antenna 28 - 1000 MHz	NT-124	☐	Mixer M28HW 26,5 GHz - 40 GHz	NT-214
☐	3115 - Horn Antenna 1 - 18 GHz	NT-125	☐	Diode Detector 0,01 GHz - 26,5 GHz	NT-215
☐	3116 - Horn Antenna 18 - 40 GHz	NT-126	☐	3160-10 Horn Antenna 26,5 GHz - 40 GHz	NT-216
☐	SAS-200/543 - Bicon. Ant. 20 MHz - 300 MHz	NT-127	☐	Radiocommunicationanalyzer SWR 1180 MD	NT-217
☐	AT-1080 - Log. Per. Ant. 80 - 1000 MHz	NT-128	☐	Mixer M19HWD 40 GHz - 60 GHz	NT-218
☒	HK-116 - bicon. Ant. 20 MHz - 300 MHz	NT-129	☐	Mixer M12HWD 60 GHz - 90 GHz	NT-219
☐	HK-116 - bicon. Ant. 20 MHz - 300 MHz	NT-130	☐	TDS - 540 DSO Digital scope	NT-220
☒	3146 - Log. Per. Ant. 200 - 1000MHz	NT-131	☐	PM97 Scopemeter	NT-221
☐	Loop Antenna H-Field	NT-132	☐	B9-DSP-IS Digital Analyzer for voltage fluctuations	NT-230
☐	Horn Antenna 500 MHz - 2900 MHz	NT-133	☐	DFT 555 - Power and harmonics analyzer	NT-231
☐	Log. per. Antenna 800 MHz - 2500 MHz	NT-134	☐	EFA-3 H-field- / E-field probe	NT-243
☐	Log. per. Antenna 800 MHz - 2500 MHz	NT-135	☐	E-field measuring instrument EMR-200; 100 kHz - 3 GHz	NT-244
☐	BiConiLog Antenna 26 MHz - 2000 MHz	NT-137	☐	E-field probe 100 kHz - 3 GHz	NT-245
☐	Conical Dipol Antenna PCD8250	NT-138	☐	Magneticfield-Sensor 300 kHz - 30 MHz	NT-246
☐	HZ-1 Antenna tripod	NT-150	☐	E-field probe 10 MHz - 18 GHz	NT-247
☐	BN 1500 Antenna tripod	NT-151	☐	H-field probe 10 MHz - 1 GHz	NT-248
☐	ESVP - Test receiver 20 - 1000 MHz	NT-201	☐	MDS 21 - Absorbing clamp 30 - 1000 MHz	NT-250
☐	Switchbox	NT-202	☐	FCC-203I EM Injection clamp	NT-251

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Department: EMV

Test report number:
M/EMV-02/253

Page: 1 of 3

Date: 09.10.2002

Checked by: 

Appendix 1 (continued) Test equipment used

☐ FCC-203I-DCN Femite decoupling network	NT-252	☐ AS0102-65R - RF-Amplifier 1 GHz - 2 GHz	NT-333
☐ PR50 Current Probe	NT-253	☐ APA01 - RF-Amplifier 0,5 GHz - 2,5 GHz	NT-334
☐ Model 2000 Digital Multimeter	NT-261	☐ Preamplifier 1 GHz - 4 GHz	NT-335
☐ Fluke 97 Digital Multimeter	NT-262	☐ 2-97201 Electronic load	NT-341
☐ Fluke 97 Digital Multimeter	NT-263	☐ TSX3510P - Power supply 0-30 V / 0 - 10 A	NT-344
☒ ESH2-Z5 Artificial mains network 4x25A	NT-300	☐ TSX3510P - Power supply 0-30 V / 0 - 10 A	NT-345
☐ ESH3-Z5 Artificial mains network 2x10A	NT-301	☐ VDS 200 Mobil-impuls-generator	NT-350
☐ ESH3-Z6 Artificial mains network 1x100A	NT-302	☐ LD 200 Mobil-impuls-generator	NT-351
☐ ESH3-Z4 T-Artificial network	NT-303	☐ MPG 200 Mobil-Impuls-Generators	NT-352
☒ PHE 4500/B Power amplifier	NT-304	☐ EFT 200 Mobil-impuls-generator	NT-353
☐ EZ10 T-Artificial network	NT-305	☐ FP 16/3-1 3 ph. Coupling filter (Burst)	NT-400
☐ MidiStar Telephone exchange	NT-306	☒ PHE 4500 - Mains impedance network	NT-401
☐ SMG - Signal generator 0,1 - 1000 MHz	NT-310	☐ FP-SURGE 32.1 3 ph. Coupling filter (Surge)	NT-402
☐ PM 5518 TXVPS Video generator	NT-311	☐ IP 6.2 Coupling filter for data lines (Surge)	NT-403
☐ RefRad Reference generator	NT-312	☐ ESH2-Z3 - Probe 9 kHz - 30 MHz	NT-410
☐ SMP 02 Signal generator 10 MHz - 20 GHz	NT-313	☐ IP 4 - Capacitive clamp (Burst)	NT-411
☐ PEFT - Burst generator up to 4 kV	NT-320	☐ HV-Attenuator 54,5 dB (Burst)	NT-420
☐ PSD - ESD generator up to 25 kV	NT-321	☐ RF-Attenuator 20 dB 0,1 - 1000 MHz / 25 W	NT-421
☐ ESD-Pistol	NT-322	☐ RF-Attenuator 10 dB 0,1 - 1000 MHz / 20 W	NT-422
☐ Vacuum-Relais up to 8 kV	NT-323	☐ RF-Attenuator 30 dB 0,1 - 1000 MHz / 1 W	NT-423
☐ PSURGE 4.1 Surge generator	NT-324	☐ RF-Attenuator 30 dB	NT-424
☐ TRANSIENT 1000 Immunity test system	NT-325	☐ RF-Attenuator 6 dB 0,1 - 1000 MHz / 1 W	NT-425
☐ VCS 500-M6 Surge-Generator	NT-326	☐ RF-Attenuator 6 dB 0,1 - 1000 MHz / 1 W	NT-426
☐ BTA-250 - RF-Amplifier 9 kHz - 220 MHz / 250 W	NT-330	☐ Voltage-divider 1:100	NT-427
☐ 500W1000M7 - RF-Amplifier 80 - 1000 MHz / 500 W	NT-332	☐ RF-Attenuator 6 dB	NT-428

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Department: EMV

Test report number:
M/EMV-02/253

Page: 2 of 3

Date: 09.10.2002

Checked by: 

Appendix 1 (continued)

Test equipment used

☐ RF-Attenuator 0 dB - 81 dB	NT-429	☒ ES-K1 Test software	NT-520
☐ WRU 27 - Band blocking 27 MHz	NT-430	☐ ESPC-K1 Test software	NT-521
☐ WHJ450C9 AA - High pass 450 MHz	NT-431	☐ SPS_PHE - Test software voltage fluctuations/harmonics	NT-525
☐ WHJ250C9 AA - High pass 250 MHz	NT-432	☐ SPS_EM - Test software for PHE 4500/B	NT-527
☐ RF-Load 150 W	NT-433	☐ Noise power test apparatus according to EN 55014	NT-530
☐ Impedance transducer 50 Ohm - 800 Ohm	NT-435	☐ Vertical coupling plane (ESD)	NT-531
☐ I+P 7780 Directional coupler 100 - 2000 MHz	NT-440	☐ Equipment for ESD-pulse verification.	NT-532
☒ ESH3-Z2 - Pulse limiter 9 kHz - 30 MHz	NT-441	☐ TEM-Zelle	NT-533
☐ Power Divider 6 dB/1 W/50 Ohm	NT-443	☐ ESV-24 Plotter adapter	NT-540
☐ Directional coupler 0,1 MHz - 70 MHz	NT-444	☒ Test cables	NT-550
☐ Directional coupler 0,1 MHz - 70 MHz	NT-445	☐ Test cable #4 for EN 61000-4-6	NT-553
☐ Tube imitations according to EN 55015	NT-450	☒ Test cable #3 for conducted emission	NT-554
☐ FCC-801-M5-25 Coupling decoupling network	NT-460	☐ Test cable #5 ESD-cable (2x470k)	NT-555
☐ FCC-801-AF10 Coupling decoupling network	NT-461	☐ Test cable #6 ESD-cable (2x470k)	NT-556
☐ FCC-801-S25 Coupling decoupling network	NT-462	☐ Serial data - fiber optic link	NT-557
☐ FCC-801-T4 Coupling decoupling network	NT-463	☐ Test cable #8 Sucoflex 104EA	NT-559
☐ FCC-801-C1 Coupling decoupling network	NT-464	☐ Test cable #9 (for outdoor measurements)	NT-580
☒ F-16A - Current probe 1kHz - 70MHz	NT-465	☐ Test cable #10 (for outdoor measurements)	NT-581
☒ PC P450 - Test computer	NT-500	☐ Test cable #13 PBA-33PBC-10	NT-584
☐ SE 284 GPIB - Plotter	NT 502	☐ Shield chamber	NT-600
☐ PC P133 Test computer #2	NT-504	☐ Climatic chamber -55°C to +180°C	M-512
☐ PC P200 MMX Notebook	NT-505	☐ Control and simulation equipment for EUT	---
☐ PC PIII 933 MHz Notebook	NT-506		
☐ 7110 - Controlling device for E-Field probe	NT-510		
☐ Monitoring camera with Monitor	NT-511		
☐ BSR-V1 - Video transmission system (optical fiber link)	NT-512		

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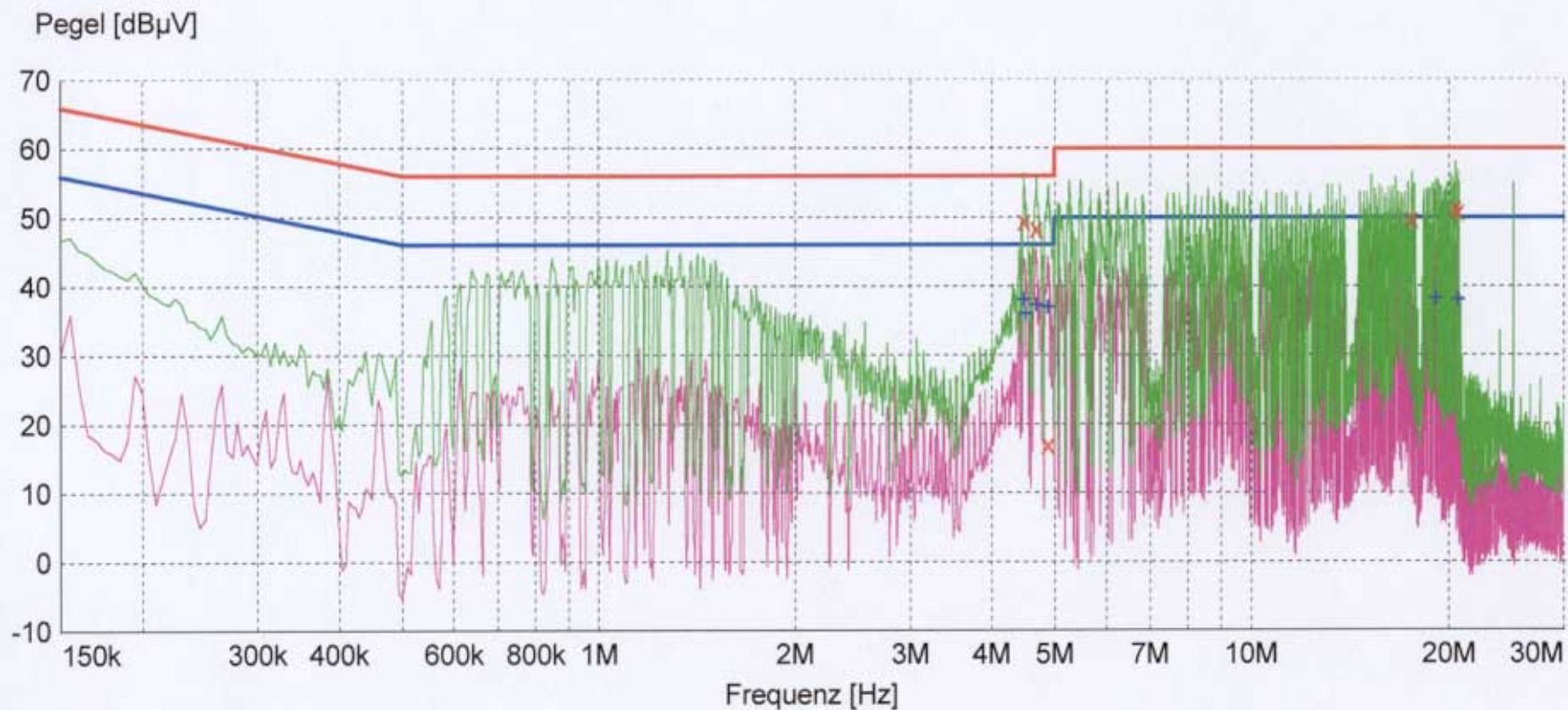
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M/EMV-02/253

Page: 3 of 3

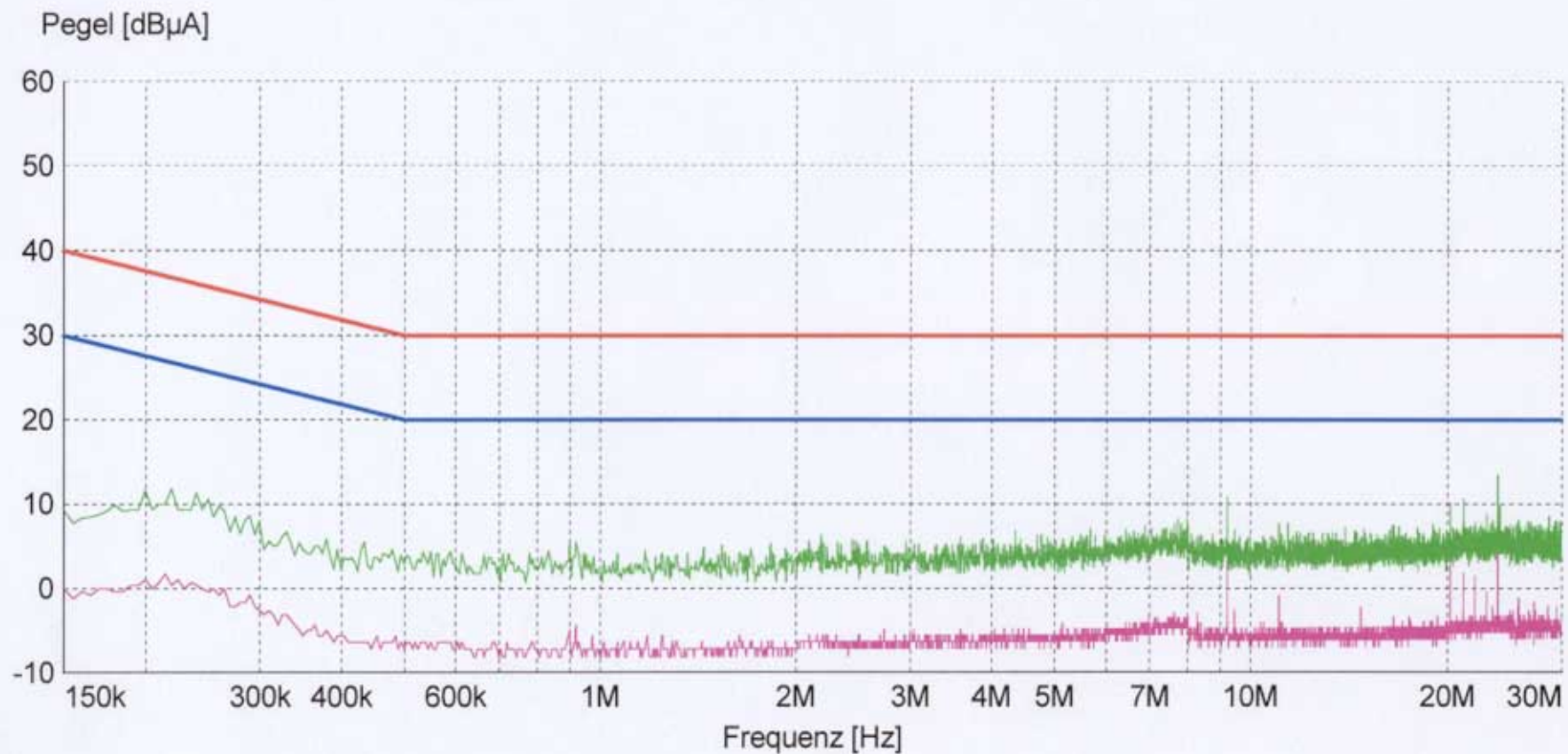
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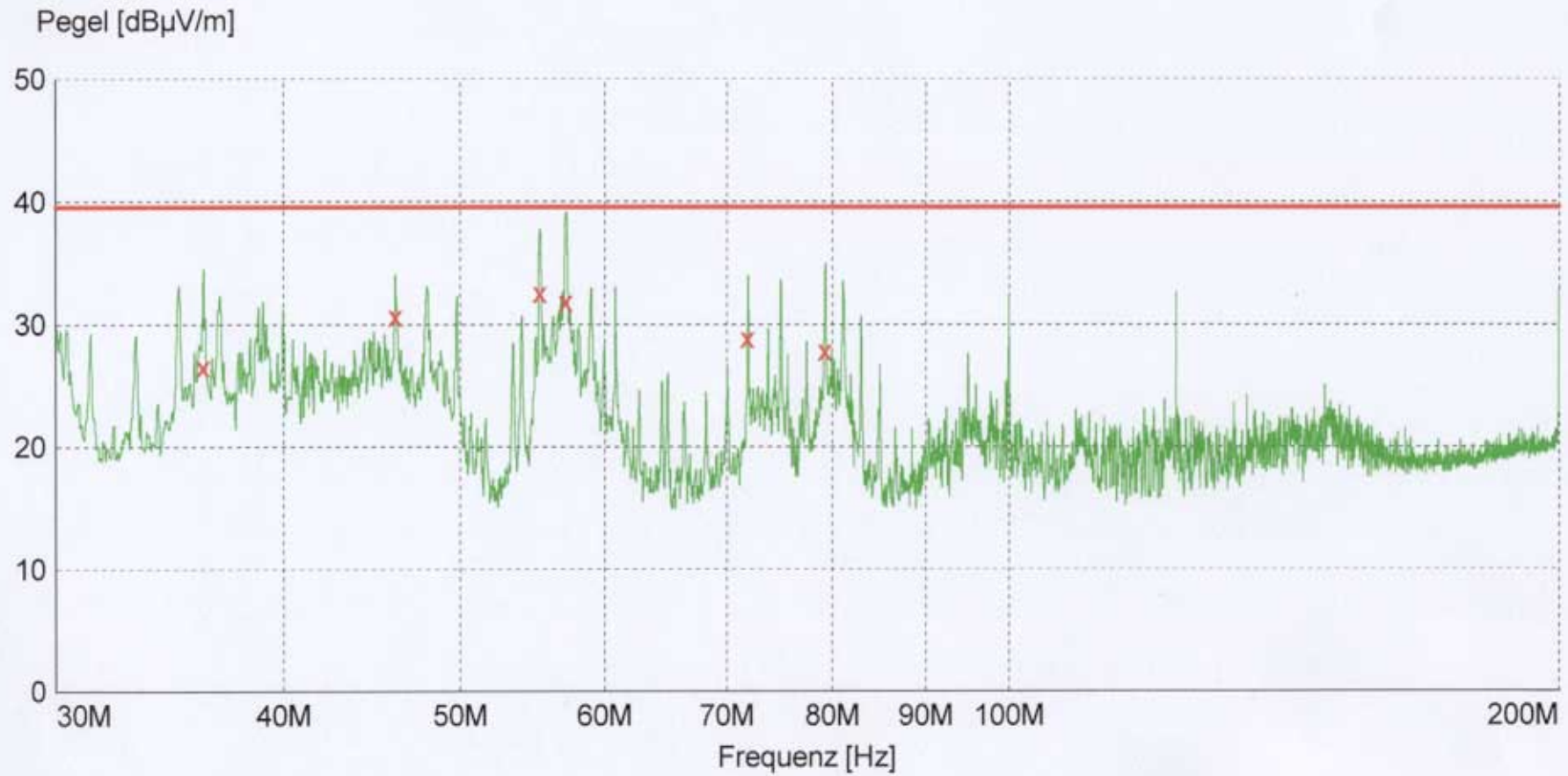


x x x	MES	C_LAN_V00_fin	QP
+ + +	MES	C_LAN_V00_fin	AV
—	MES	C_LAN_V00_pre	PK
—	MES	C_LAN_V00_pre	AV
—	LIM	EN 55022 V	QP
—	LIM	EN 55022 V	AV

EN 55022 V QP
EN 55022 V AV



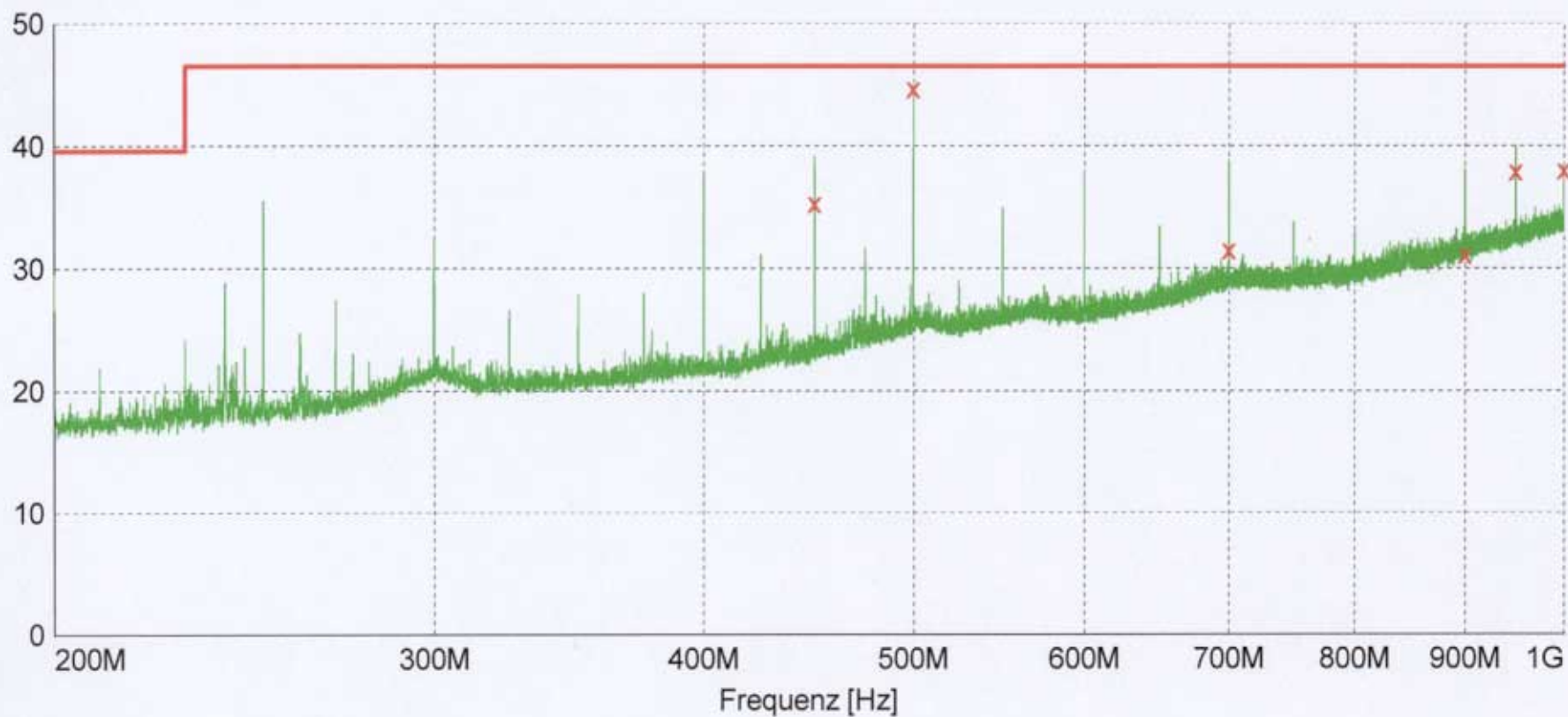
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 — MES C-LAN_C01_pre AV
 — LIM EN 55022 C QP
 — LIM EN 55022 C AV



x x : MES C_LAN_F1_fin QP
 — MES C_LAN_F1_pre PK
 — LIM EN 55022 F QP

EN 55022 F QP

Pegel [dB μ V/m]



x x : MES C_LAN_F2_fin QP
 — MES C_LAN_F2_pre PK
 — LIM EN 55022 F QP

EN 55022 F QP