

Test report

IFA29_01.DOC

EUT: Short range device
Trade name: HDP 1525 Opt. 15, 71, 91, 94
Tested type: HDP 1525 Opt. 15, 91, 94
Equipment Class: DXX
FCC Identifier: RPCHDP1525 - Pending

Production level: Prototype
S/N: xx

Responsible party: Interflex Datensysteme GmbH
Großwiesenstr. 24
D-78591 Durchhausen
Germany

Measurement procedure: FCC Rules CFR 47 Part 15
– Subpart C Section 15.209
The regulations were

☒
☐

kept
not kept

Applicant: Interflex Datensysteme GmbH
Großwiesenstr. 24
D-78591 Durchhausen
Germany

Contact person: Mr. Kiemele

Arrival of EUT: 07/14/2004

ID of EUT: PRA29_01

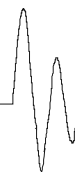
Date(s) of test of EUT: 07/14/2004

Remarks:

The test results effects only to the relate items tested. The test report shall not be reproduced except in full without the written approval of the testing laboratory

- Test laboratory:** EMCE GmbH Ingenieurbüro für EMV-Prüfungen
und Schaltungsentwicklung
Laupheimer Str. 25d
88483 Burgrieden / Germany
Conformity Assessment Body / FCC Registration Nr. 90568
DAR-Registration Nr: TTI-P-G164/98
- Test engineer:** Mr. Chr. Vogelmann
EMCE GmbH Ingenieurbüro für EMV-Prüfungen
und Schaltungsentwicklung
- EUT description:** Terminal with integrated reader for an access control system.
The product offers following features:
- Integrated antenna, not accessible for the customer
 - Ethernet port
 - Beeper
 - External power supply with 24VDC
 - Reading module with print antenna
 - o HID IF 61X
- Operating frequency:** 126kHz $\pm$ 1kHz / Fundamental frequency of the magnetic field
Crystal frequencies: 16.0MHz, 20.0MHz, 24.576MHz
RC-Oscillator frequencies: 30kHz, 260kHz
- EUT size:** HDP 1525 239x210x88 (LxWxH)
- EUT configuration:** The terminal was supplied via an external power supply. A PC monitored the reader information. The PC was connected to the terminal via Ethernet. Open circuit for the I/O lines.

Harness	Type	Length	Remarks
I/O	Common cable 12 wires 6x2x0.6	> 4.3m	Shielded
Ethernet	CAT 5	>10m	Shielded
DC	2 wires	3m	None

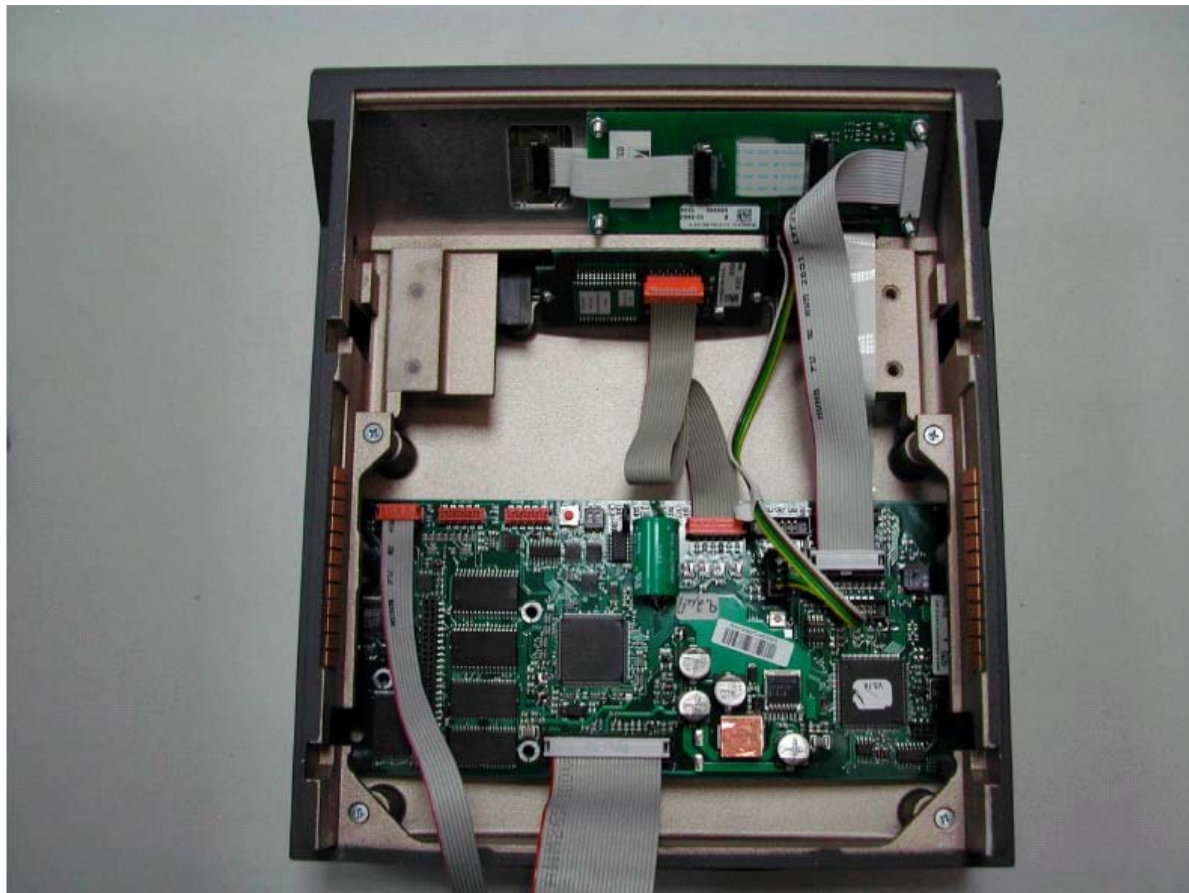


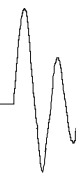
Used accessories:

Designation	S/N	FCC-ID	Manufacturer
Power Supply	8800091740307	xx	Deutronic
PC SCENIC 5T/90 PCI	S26361-K345-V711	xx	Siemens Nixdorf Informationssysteme AG
Monitor CPD-15SF2T	2318573	xx	Sony
ID-Card with transponder HID		xx	Interflex Datensysteme GmbH

Additional information: This report is an application for certification of a transmitter operating pursuant to 47 CFR 15.209.

EUT: HDP 1525 – without cover





Reading module HID IF 61X



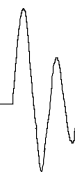


ID Card



List of valid equipment

☒	Inv-Nr.	Designation	Type	Manufacturer	S/N
☒	001	Test receiver	ESS 5Hz - 1000 MHz	Rohde & Schwarz	833776/008
	002	Probe	ESH2-Z3	Rohde & Schwarz	-
☒	003	LISN 1	ESH3-Z5	Rohde & Schwarz	835268/007
☒	004	LISN 2	ESH3-Z5	Rohde & Schwarz	835268/003
	005	LISN 3	NNB 4/32T	Rolf Heine HF-Technik	4/32T-96015
	006	LISN	NNBM 8125	Schwarzbeck	8125371
	007	Absorbing clamp	MDS 21	Schwarzbeck	942436
☒	008	Antenna 9kHz - 30MHz	HFH2-Z2	Rohde & Schwarz	835776/0002
	009	Antenna 30 - 300MHz	VHBA9123 / BBA9106	Schwarzbeck	435
☒	010	Antenna 250 -1200MHz	UHALP 9108A	Schwarzbeck	108
☒	011	Antenna 30 - 300MHz	VHBA9123 / BBA9106	Schwarzbeck	0408/94
	012	Antenna 250 -1200MHz	UHALP 9108A	Schwarzbeck	166
	013	Antenna 9kHz - 30MHz	Loop antenna 1.5m	EMCE GmbH	-
☒	014	Open area test site	3m	EMCE GmbH	-
	015	Open area test site	10m	EMCE GmbH	-
	019	Burst generator	PEFT / PHV 41.2	Haefely	082948-50
	020	Coupling clamp	IP4A	Haefely	082672-13
	022	ESD-Gun	NSG 435	Schaffner	577
	024	HF-Generator	SMY01	Rohde & Schwarz	844146/046
	025	Current clamp BCI	F-120-2	FCC	47
	026	Coupling device network	CDN 801-M3-25	FCC	92
	027	Surge Generator	Transient 1000	EMC-Partner AG	TRA1000-85
	029	HF Amplifier	10W1000	Amplifier Research	10576
	030	Coupling device network	CDN 801- S1/9pol.DSUB	EMCE GmbH	-
	031	Coupling device network	CDN 801- S1/9pol.DSUB	EMCE GmbH	-

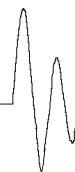


☒	Inv-Nr.	Designation	Type	Manufacturer	S/N
	032	HF Amplifier	75A250	Amplifier Research	22789
	033	Coupling device network	CDN AF2	EMCE GmbH	
	034	Coupling device network	CDN AF2	EMCE GmbH	
	035	3-Phase Coupling network	CDN-1000	EMC-Partner AG	CDN-1000-45
	036	Coupling device network	CDN 801-M5-25	EMCE GmbH	
	037	Coupling device network	CDN 801-T1	EMCE GmbH	
	038	Helmholtz coil	1x1m	EMCE GmbH	
	039	Helmholtz coil	1x1m	EMCE GmbH	
	040	Current transformer		EMCE GmbH	
	041	HZ-10	Shielded coil	Rohde & Schwarz	849788/020
☒	042	AC-Source / Analyser / Normimpedance	EMV D5000/PAS	Spitzenberger + Spies	A274700/0 0501
	xx	Susceptibility test equipment according DIN EN 61000-4-3	Full anechoic chamber 3m test site	Siemens	xx



Scope:

1	EMC - Test(s).....	10
1.1	EMI Report FCC Rules CFR 47 Part 15 – Subpart C Section 15.209	10
1.1.1	Terminal voltage	10
1.1.1.1	Test set up.....	10
1.1.1.2	Test	12
1.1.2	Radiated emissions	22
1.1.2.1	Test set up.....	22
1.1.2.2	Test – Intentional / unwanted emissions	24
1.1.2.3	Test – Unintentional radiation	29
2	Summary.....	35



1 EMC - Test(s)

1.1 EMI Report FCC Rules CFR 47 Part 15 – Subpart C

1.1.1 Terminal voltage

1.1.1.1 Test set up

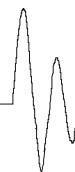
According ANSI C63.4-1992

Test location: ☒ Shielded room ☐ Laboratory
☐ Other(s):

The test equipment was checked and met the requirements. ☒







1.1.1.2 Test

Regulation:

FCC Rules CFR 47 Part 15 – Subpart C Section 15.207

Range: ☒ 150kHz - 30MHz
 Limits: ☒ Class B ☐ Class A

Operation mode:

EUT arrangement: ☒ Tabletop ☐ Floor standing

Port EUT#	Lead	Type	Remarks
#1	HDP 1525	L/N/PE	External power supply of the proximity reader.
#2	PC	L/N/PE	The monitor is supplied via PC.
#3			

Continuous operation of the terminal. The ID card was placed in the reading range of the terminal. During the test a telnet connection was established between the terminal and the PC with continuous transmission of frame data. This operation mode shows “worst case” emanations.

Environmental conditions:

Temperature: 15 - 35°C
 Humidity: 30 - 60%
 Air pressure: 860 – 1060hPa



The environmental conditions during the test:

☒
☐

were kept
were not kept

Test results:

Measurements are made with a CISPR receiver. If the emanation is closer than 6dB to the limits or more, the receiver will stop and measure the exact value with quasipeak or average detector. The frequency, the measured value and the limit will be printed out.

Summary:

Limits for continuous disturbances:

☒
☐

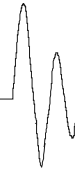
kept
not kept

Remarks: The monitor was supplied via the PC.

Protocol scope:

☒
☒

Readings
Diagram continuous emanations



EMCE GmbH Ing_buero fuer EMV_Pruefungen

Terminal voltage

14. Jul 04 10:08

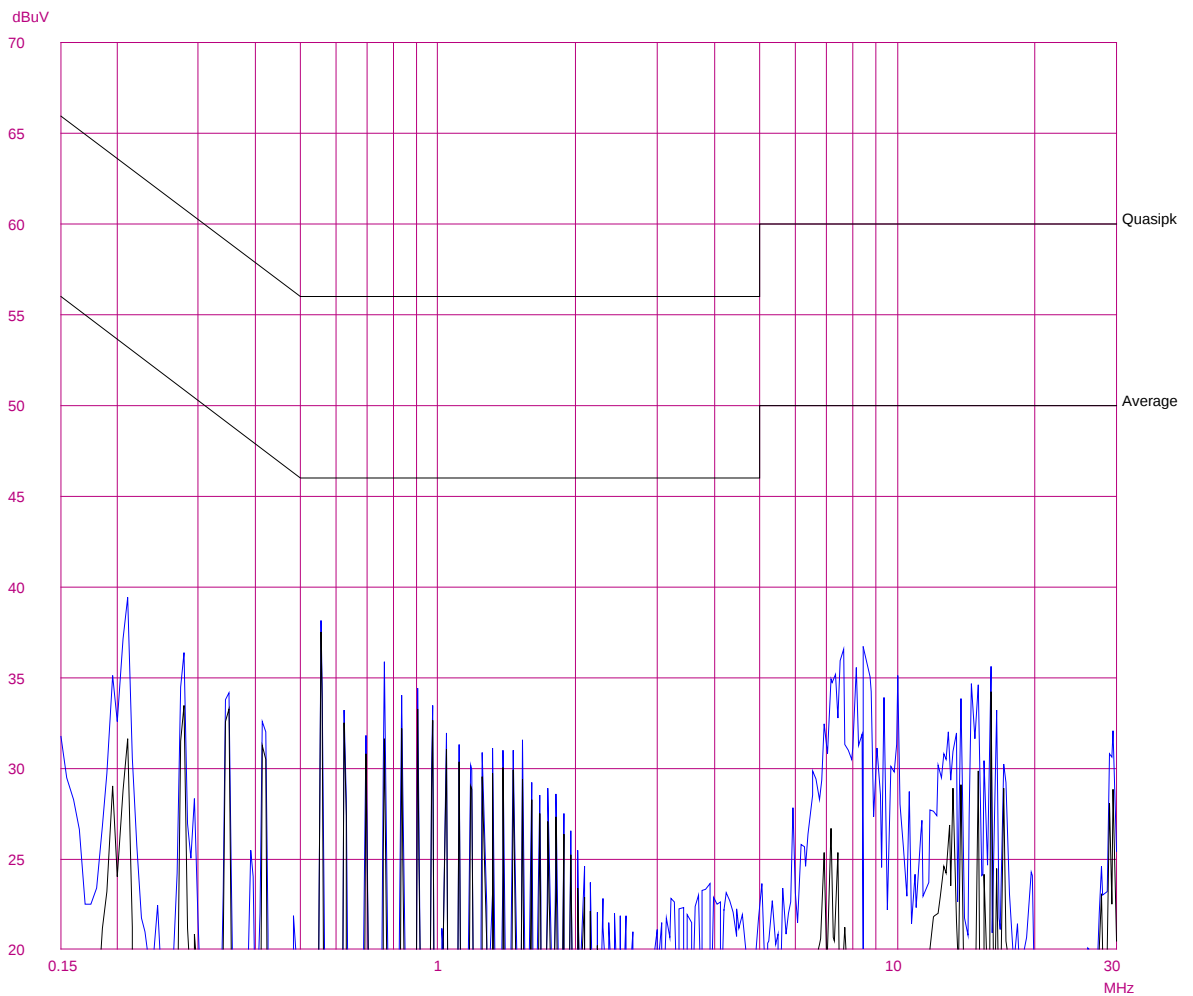
EUT: HDP 1525
 Manuf: Interflex Datensysteme GmbH
 Op Cond: Normal operation with ID card
 Operator: Mr. Hauser
 Test Spec: CFR Part 15 Subpart C - Class B
 Comment: Test_ID PRA29_05
 IFA29_11, Phase L1 - Master Terminal HDP 1525

Scan Settings (1 Range)

Frequencies				Receiver Settings			
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp OpRge
150k	30M	5k	10k	PK+AV	20ms	AUTO	LN OFF 60dB

Final Measurement: x QP / + AV
 Meas Time: 1 s
 Subranges: 50
 Acc Margin: 6dB

Transducer No.	Start	Stop	Name
2	1Hz	1000M	Kabel_6m





EMCE GmbH Ing_buero fuer EMV_Pruefungen Terminal voltage

14. Jul 04 10:08

EUT: HDP 1525
Manuf: Interflex Datensysteme GmbH
Op Cond: Normal operation with ID card
Operator: Mr. Hauser
Test Spec: CFR Part 15 Subpart C - Class B
Comment: Test_ID PRA29_05
IFA29_11, Phase L1 - Master Terminal HDP 1525

Scan Settings (1 Range)

Frequencies				Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge	
150k	30M	5k	10k	PK+AV	20ms	AUTO	LN	OFF 60dB	

Final Measurement Results:

no Results

EMCE GmbH Ing_buero fuer EMV_Pruefungen Terminal voltage

14. Jul 04 10:18

EUT: HDP 1525
Manuf: Interflex Datensysteme GmbH
Op Cond: Normal operation with ID card
Operator: Mr. Hauser
Test Spec: CFR Part 15 Subpart C - Class B
Comment: Test_ID PRA29_05
IFA29_12, Phase N - Master Terminal HDP 1525

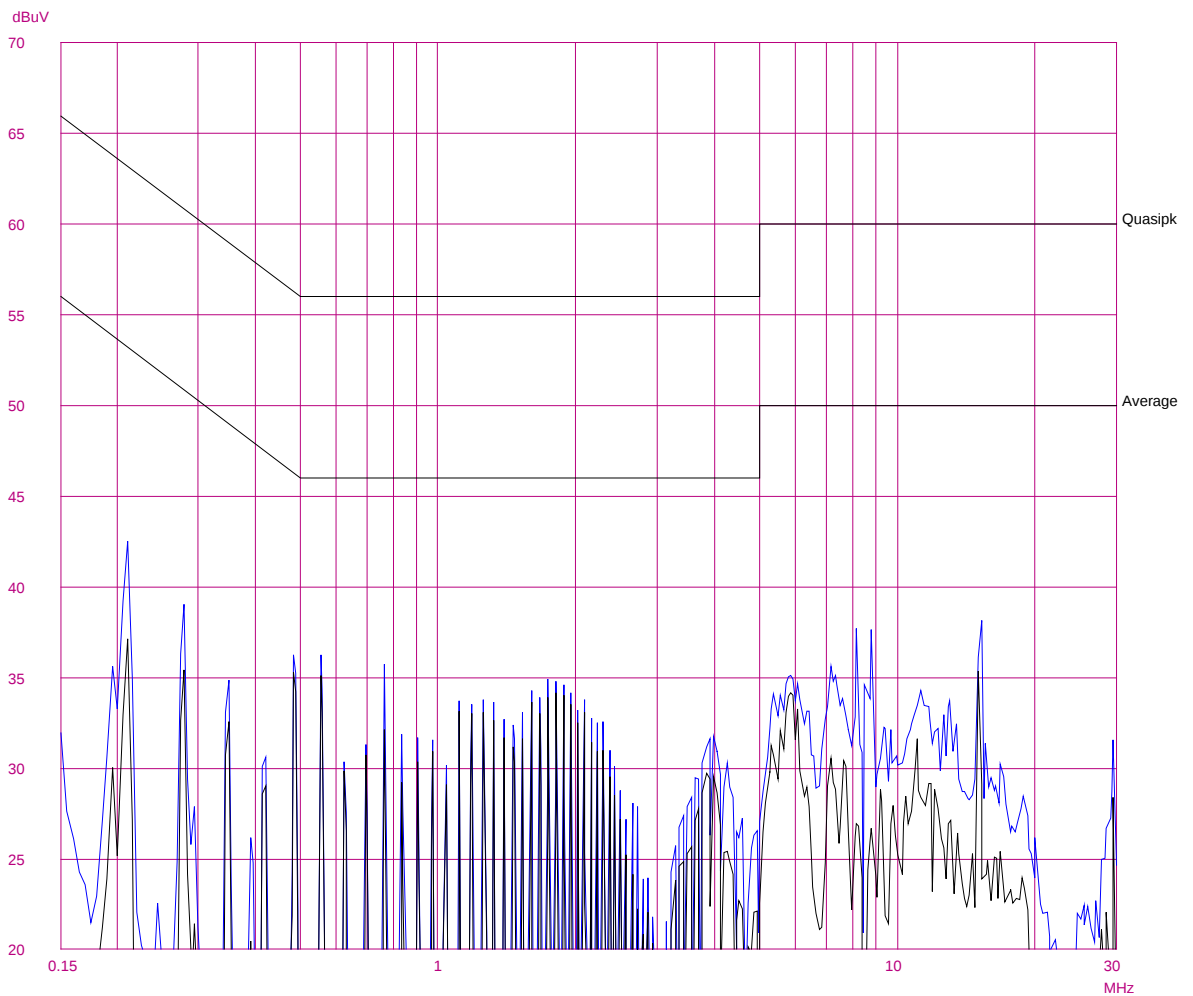
Scan Settings (1 Range)

Frequencies				Receiver Settings			
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp OpRge
150k	30M	5k	10k	PK+AV	20ms	AUTO	LN OFF 60dB

Final Measurement: x QP / + AV

Meas Time: 1 s
Subranges: 50
Acc Margin: 6dB

Transducer No.	Start	Stop	Name
2	1Hz	1000M	Kabel_6m





EMCE GmbH Ing_buero fuer EMV_Pruefungen Terminal voltage

14. Jul 04 10:18

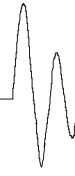
EUT: HDP 1525
Manuf: Interflex Datensysteme GmbH
Op Cond: Normal operation with ID card
Operator: Mr. Hauser
Test Spec: CFR Part 15 Subpart C - Class B
Comment: Test_ID PRA29_05
IFA29_12, Phase N - Master Terminal HDP 1525

Scan Settings (1 Range)

Frequencies				Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge	
150k	30M	5k	10k	PK+AV	20ms	AUTO	LN	OFF 60dB	

Final Measurement Results:

no Results



EMCE GmbH Ing_buero fuer EMV_Pruefungen Terminal voltage

14. Jul 04 10:28

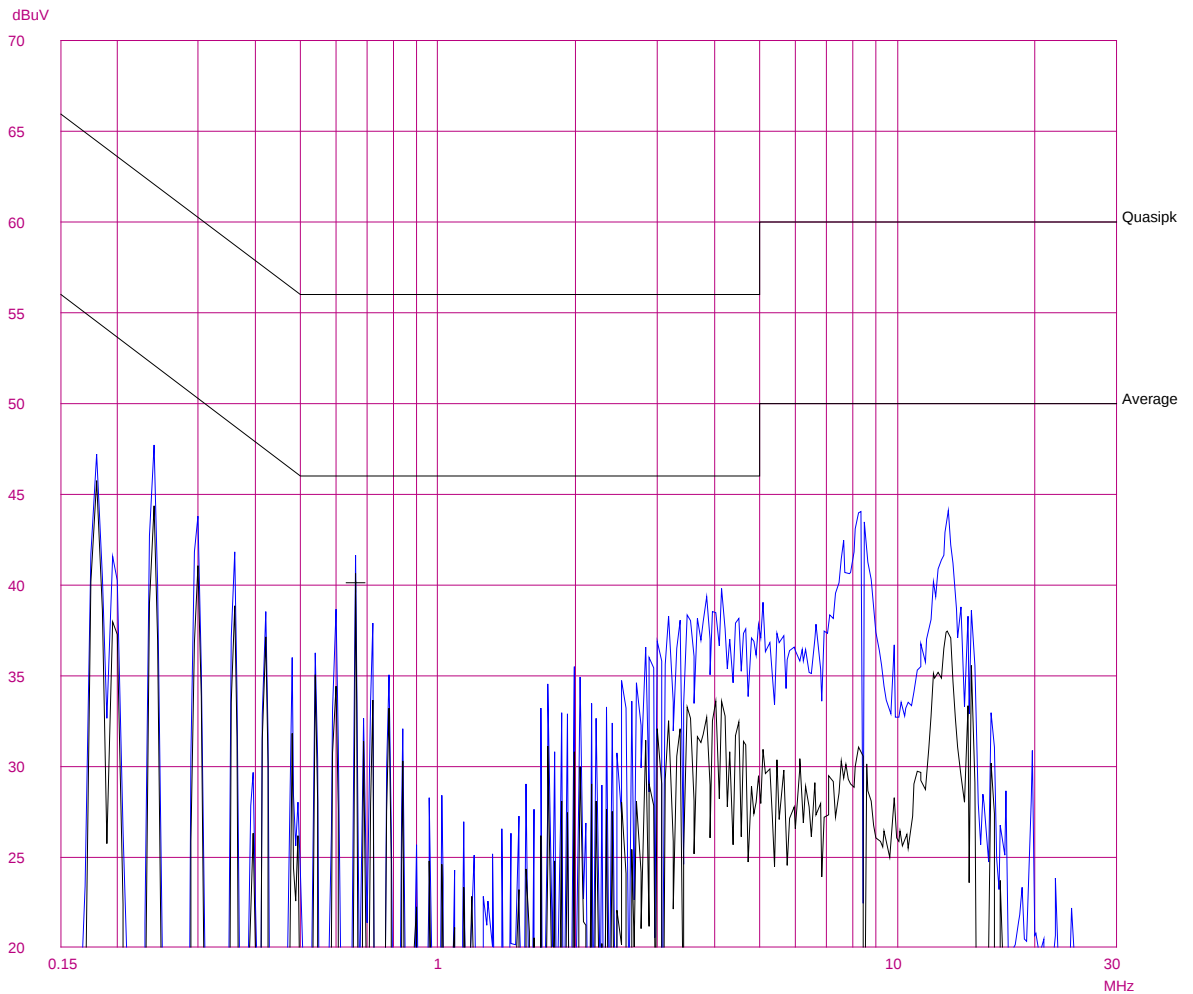
EUT: HDP 1525
Manuf: Interflex Datensysteme GmbH
Op Cond: Normal operation with ID card
Operator: Mr. Hauser
Test Spec: CFR Part 15 Subpart C - Class B
Comment: Test_ID PRA29_05
IFA29_13, Phase L1 - PC

Scan Settings (1 Range)

Frequencies				Receiver Settings			
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp OpRge
150k	30M	5k	10k	PK+AV	20ms	AUTO	LN OFF 60dB

Final Measurement: x QP / + AV
Meas Time: 1 s
Subranges: 50
Acc Margin: 6dB

Transducer No.	Start	Stop	Name
2	1Hz	1000M	Kabel_6m





EMCE GmbH Ing_buero fuer EMV_Pruefungen

Terminal voltage

14. Jul 04 10:28

EUT: HDP 1525
 Manuf: Interflex Datensysteme GmbH
 Op Cond: Normal operation with ID card
 Operator: Mr. Hauser
 Test Spec: CFR Part 15 Subpart C - Class B
 Comment: Test_ID PRA29_05
 IFA29_13, Phase L1 - PC

Scan Settings (1 Range)

Frequencies				Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge	
150k	30M	5k	10k	PK+AV	20ms	AUTO	LN	OFF 60dB	

Final Measurement Results:

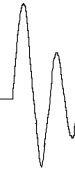
Frequency	QP Level	QP Limit
MHz	dBuV	dBuV

no Results

Frequency	AV Level	AV Limit
MHz	dBuV	dBuV

0.66000	40.1	46.0
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* limit exceeded



EMCE GmbH Ing_buero fuer EMV_Pruefungen Terminal voltage

14. Jul 04 10:39

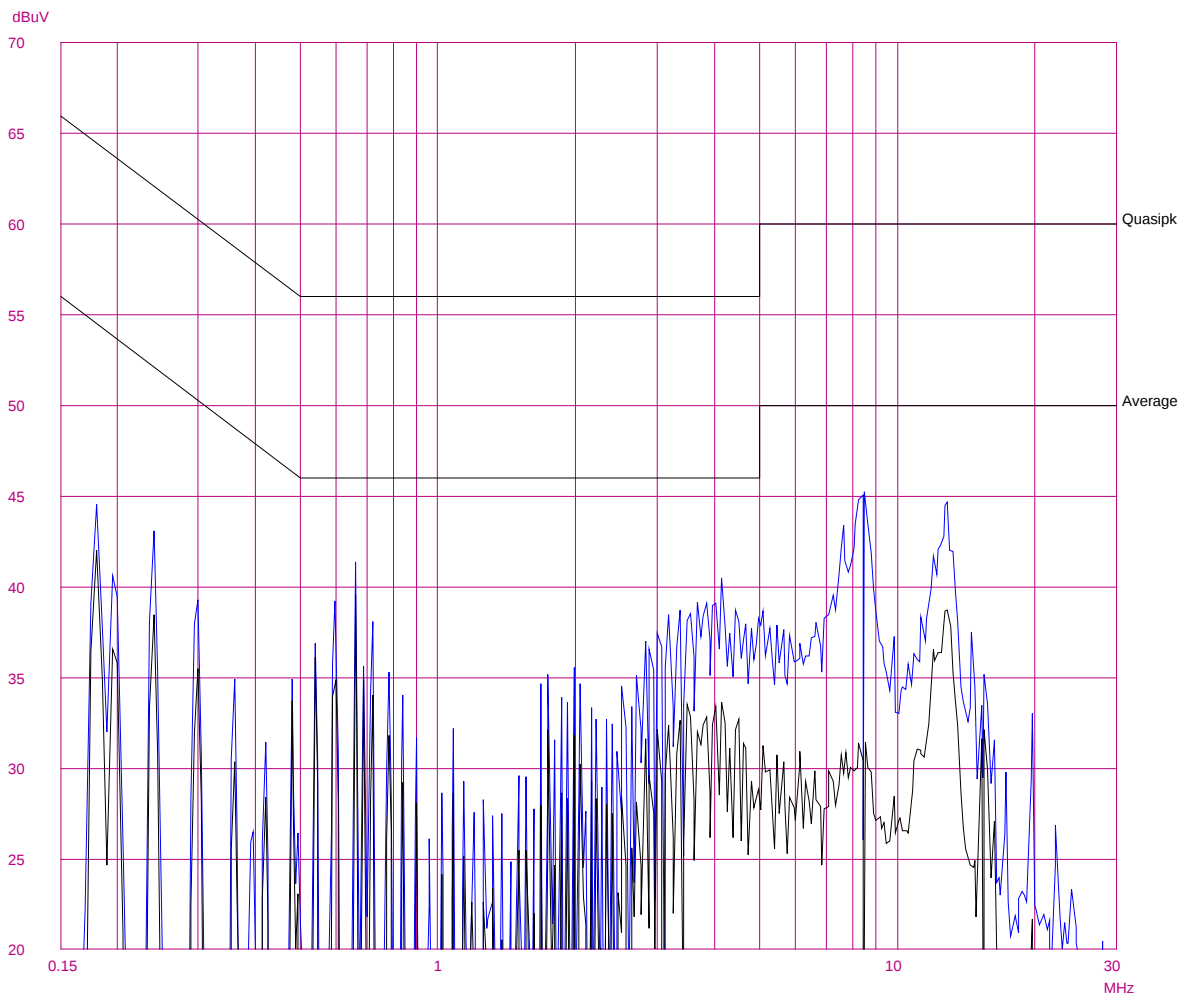
EUT: HDP 1525
Manuf: Interflex Datensysteme GmbH
Op Cond: Normal operation with ID card
Operator: Mr. Hauser
Test Spec: CFR Part 15 Subpart C - Class B
Comment: Test_ID PRA29_05
IFA29_14, Phase N - PC

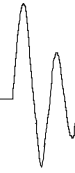
Scan Settings (1 Range)

Frequencies				Receiver Settings			
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp OpRge
150k	30M	5k	10k	PK+AV	20ms	AUTO	LN OFF 60dB

Final Measurement: x QP / + AV
Meas Time: 1 s
Subranges: 50
Acc Margin: 6dB

Transducer No.	Start	Stop	Name
2	1Hz	1000M	Kabel_6m





EMCE GmbH Ing_buero fuer EMV_Pruefungen Terminal voltage

14. Jul 04 10:39

EUT: HDP 1525
Manuf: Interflex Datensysteme GmbH
Op Cond: Normal operation with ID card
Operator: Mr. Hauser
Test Spec: CFR Part 15 Subpart C - Class B
Comment: Test_ID PRA29_05
IFA29_14, Phase N - PC

Scan Settings (1 Range)

Frequencies				Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge	
150k	30M	5k	10k	PK+AV	20ms	AUTO	LN	OFF 60dB	

Final Measurement Results:

no Results



1.1.2 Radiated emissions

1.1.2.1 Test set up

According ANSI C63.4-1992

Test location:

Precompliance

☐

Shielded room

☐

Laboratory

Full compliance

☐

Anechoic chamber

☒

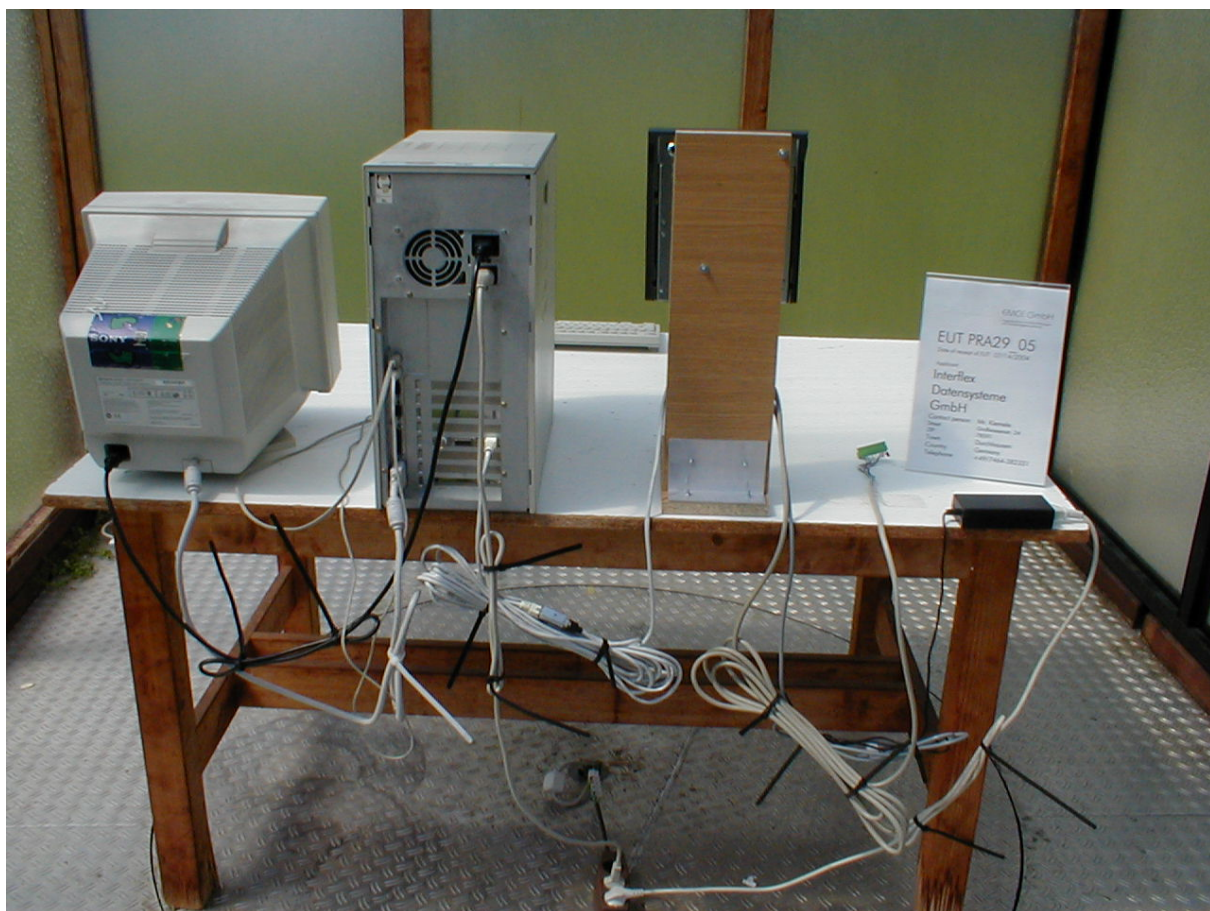
OATS 3m

☐

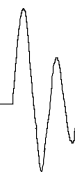
OATS 10m

The test equipment was checked and met the requirements.

☒

EMCE GmbH
Ingenieurbüro für EMV-Prüfungen
und Schaltungsentwicklung
EUT PRA29_05
Date of report: 07/14/2004
Interflex
Dotensysteme
GmbH
Contact person: Mr. Kasper
Address: ...
City: ...
Country: ...
Telephone: ...



1.1.2.2 Test – Intentional / unwanted emissions

Regulation:

FCC Rules CFR 47 Part 15 – Subpart C

Range: ☒ 9kHz - 30MHz ☐ 30MHz - 1000MHz
Limits: ☒ Section 15.209 ☐ —

Operation mode:

EUT arrangement: ☒ Tabletop ☐ Floor standing

Continuous operation with ID-Card outside of the reading range. During the test a telnet connection was established between the terminal and the PC with continuous transmission of frame data. This operation mode shows “worst case” emanations. Since the device is installed in one orientation, the emissions were maximized around the vertical axis and the maximum readings were recorded. The integrated antenna cannot be maximized separately.

Fundamental frequency of the magnetic field: 126kHz $\pm$ 1kHz

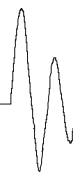
Environmental conditions:

Temperature: 15 - 35°C
Humidity: 30 - 60%
Air pressure: 860 – 1060hPa

The environmental conditions during the test: ☒ were kept
☐ were not kept

Test results:

The testing was performed at an antenna to EUT distance of 3m. Measurements were made with a CISPR receiver with quasi-peak. The average detector is used in the frequency bands 9-90kHz, 110-490kHz and above 1000MHz. For pulse modulated devices with a pulse repetition frequency of 20Hz or less, peak detector is used (15.35a Note). The frequency, the measured value, antenna information and the limit will be printed out.



Summary:

Limits for continuous disturbances:

☒
☐

kept
not kept

The level of any unwanted emissions from an intentional radiator shall not exceed the level of the fundamental wave:

☒
☐

kept
not kept

Remarks: The voltage supply of the reader was varied between the specified range 24VDC $\pm 10\%$ - there was no impact to the used center frequency or the field strength of the fundamental wave.

Protocol scope:

☐
☐
☒
☒
☒
☐

Readings - Antenna horizontal polarized.
Diagram - Antenna horizontal polarized.
Readings - Antenna vertical polarized.
Diagram - Antenna vertical polarized.
Bandwidth plot – Frequency response vs. supply voltage
Precompliance measurement(s).



Readings - Antenna vertical polarized, Antenna height 1m

Frequency MHz	Reading U dB μ V	Antenna +AF dB/m	Cable +KF dB	Emission Σ dB μ V/m	Limit dB μ V/m	Margin dB μ V/m	Ant.- Distance m	Ant.- Polar. H/V	Detector Peak / QP / AV	Receiver 6dB BW kHz
0.12610	56.0	20.0	0.0	76.0	105.6	29.6	3.0	V	Peak	0.2
0.25200	28.0	20.0	0.0	48.0	99.6	59.6	3.0	V	Peak	10
0.37790	22.0	20.0	0.0	42.0	96.1	54.1	3.0	V	Peak	10
0.50400	10.0	20.0	0.0	30.0	73.6	33.6	3.0	V	Peak	10
0.63050	16.0	20.0	0.0	36.0	71.6	35.6	3.0	V	Peak	10
0.75600	10.0	20.0	0.0	30.0	70.0	30.0	3.0	V	Peak	10
0.88200	13.0	20.0	0.0	33.0	68.7	35.7	3.0	V	Peak	10

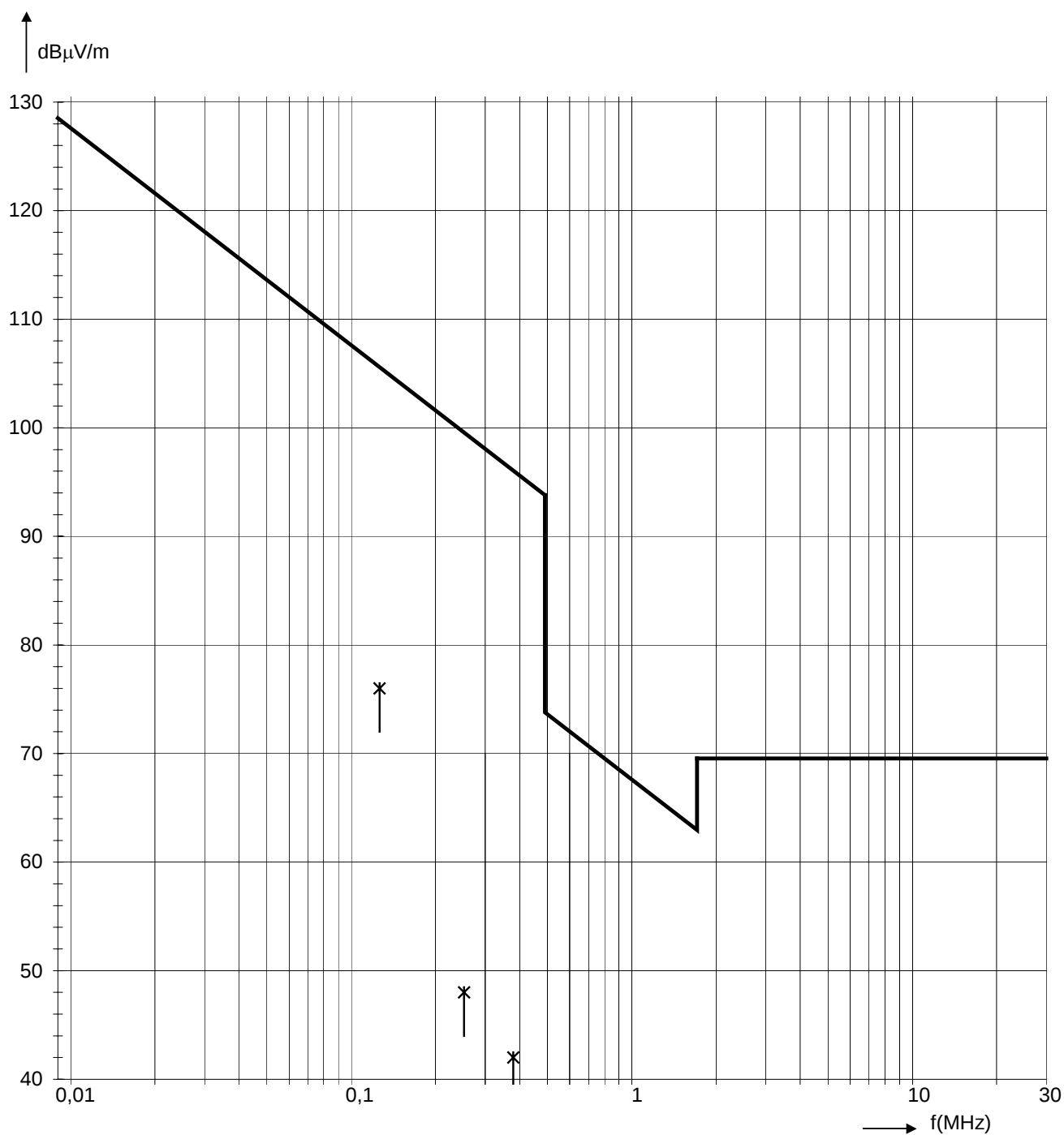


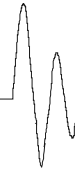
Diagram - Antenna vertical polarized

Limits according FCC Rules CFR 47 Part 15 – Subpart C

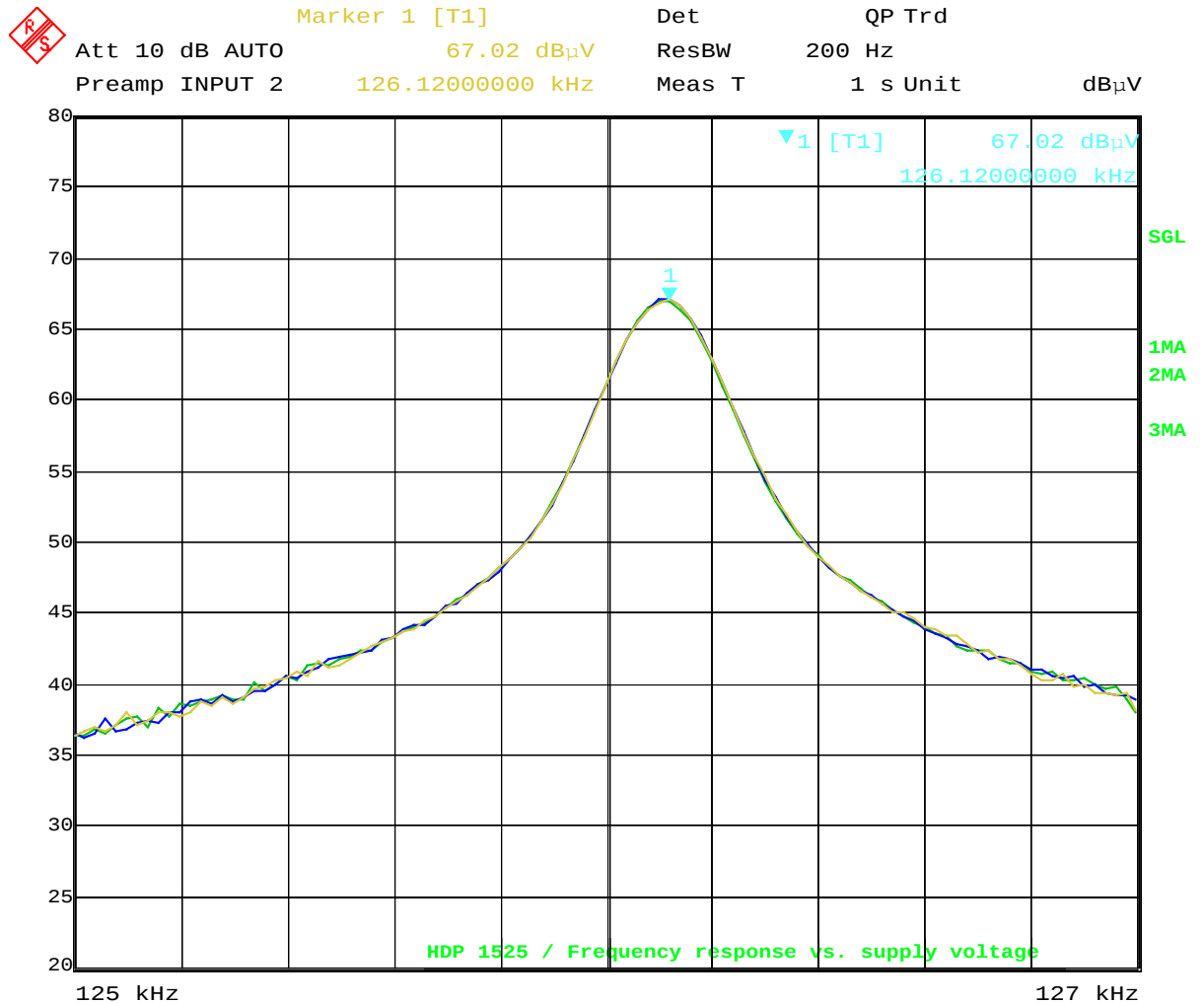


Section 15.209

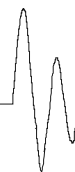




Bandwidth plot – Frequency response vs. supply voltage.



Title: HDP 1525 / Operation without ID-Card / EUT_ID PRA29_05
 Comment B: Nominal voltage (24VDC) - yellow trace
 +10% (26.4VDC) - blue trace / -10% (21.6VDC) - green trace
 Date: 14.JUL.2004 16:49:59



1.1.2.3 Test – Unintentional radiation

Regulation:

FCC Rules CFR 47 Part 15 – Subpart C

Range:	☐	9kHz - 30MHz	☒	30MHz - 1000MHz
Limits:	☒	Section 15.209	☐	—

Operation mode:

EUT arrangement: ☒ Tabletop ☐ Floor standing

Continuous operation with ID-Card in the reading range. During the test a telnet connection was established between the terminal and the PC with continuous transmission of frame data. This operation mode shows “worst case” emanations.

Environmental conditions:

Temperature:	15 - 35°C
Humidity:	30 - 60%
Air pressure:	860 – 1060hPa

The environmental conditions during the test: ☒ were kept
☐ were not kept

Test results:

The testing was performed at an antenna to EUT distance of 3m. Measurements are made with a CISPR receiver with quasi-peak detector. The frequency, the measured value, antenna information and the limit will be printed out.

Summary:

Limits for continuous disturbances: ☒ kept
☐ not kept

Remarks:	All other measured emanations, 10dB or more below the limit lines, were not listed.
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Protocol scope:

- ☒ Readings - Antenna horizontal polarized.
- ☒ Diagram - Antenna horizontal polarized.
- ☒ Readings - Antenna vertical polarized.
- ☒ Diagram - Antenna vertical polarized.
- ☐ Precompliance measurement(s).



Readings - Antenna horizontal polarized

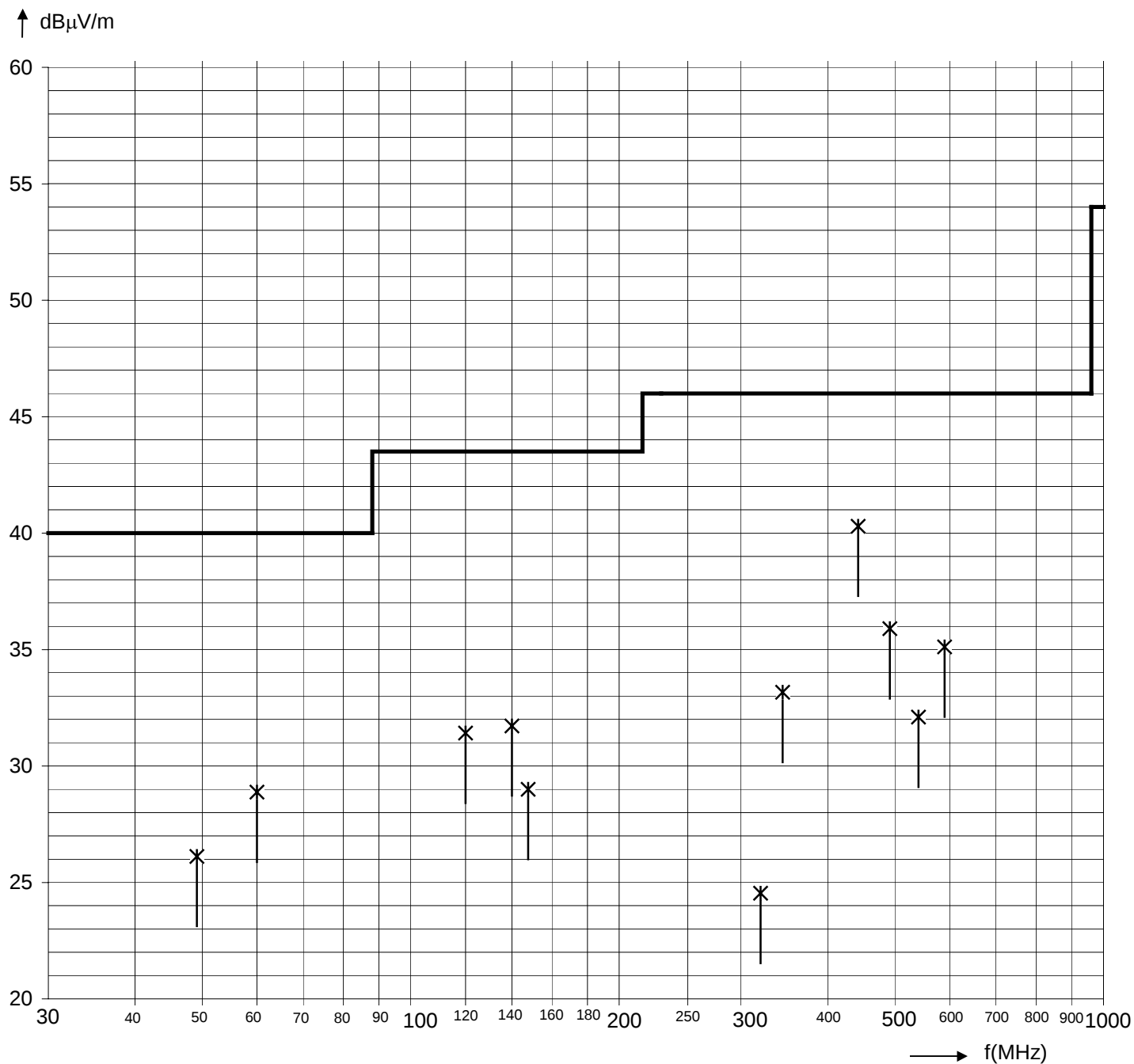
Frequency	Reading	Antenna	Cable	Emission	Limit	Margin	Ant.- Height	Ant.- Polar.
	U	+ AF	+ KF	Σ				
MHz	dB μ V	dB/m	dB	dB μ V/m	dB μ V/m	dB μ V	/m	H/V
442.410	19.1	16.8	4.4	40.3	46.0	5.7	1.0	H

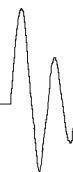


Diagram - Antenna horizontal polarized

Limits according FCC Rules CFR 47 Part 15 – Subpart C

 Section 15.209
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Readings - Antenna vertical polarized

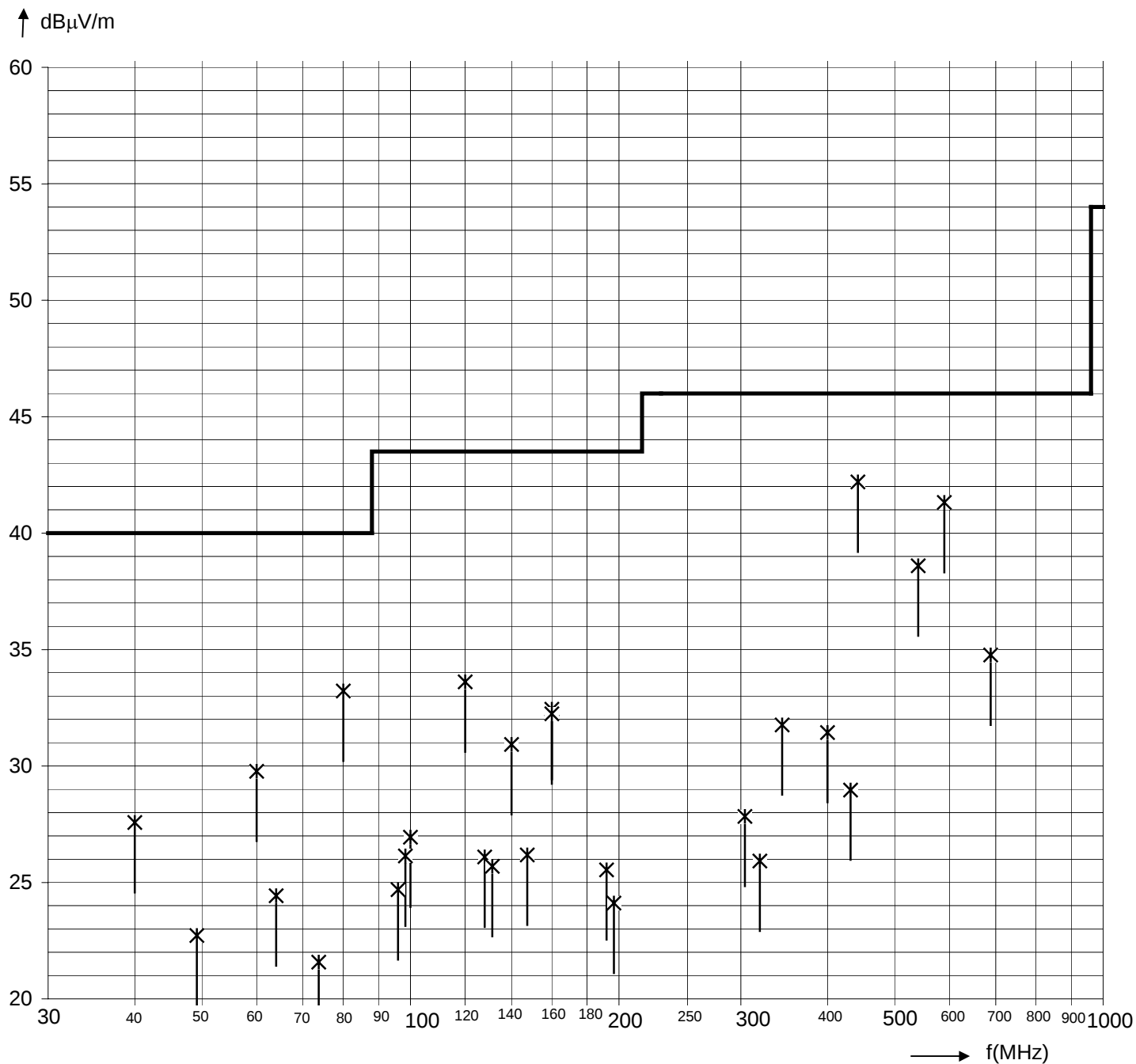
Frequency	Reading	Antenna	Cable	Emission	Limit	Margin	Ant.-	Ant.-
	U	+ AF	+ KF	Σ			Height	Polar.
MHz	dB μ V	dB/m	dB	dB μ V/m	dB μ V/m	dB μ V	meter	H/V
80.000	22.5	8.9	1.8	33.2	40.0	6.8	1.0	V
120.000	20.4	10.9	2.3	33.6	43.5	9.9	1.0	V
442.400	21.0	16.8	4.4	42.2	46.0	3.8	2.5	V
540.720	15.5	18.3	4.8	38.6	46.0	7.4	1.7	V
589.870	17.4	18.9	5.0	41.3	46.0	4.7	1.6	V



Diagram - Antenna vertical polarized

Limits according FCC Rules CFR 47 Part 15 – Subpart C

 Section 15.209
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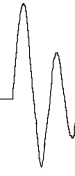
2 Summary

Regulation	Class / Test level	Result	Remark(s)
FCC Rules CFR 47 Part 15 Subpart C			
Terminal voltage 0.15-30MHz	Section 15.207	Limits kept.	
Radiated emissions 0.009-30MHz	Section 15.209	Limits kept.	Intentional / unwanted emissions
Radiated emissions 30-1000MHz	Section 15.209	Limits kept.	Unintentional emissions

Statement of Conformity

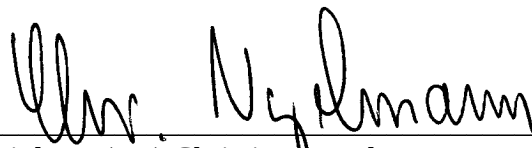
The Interflex HDP 1525 has been found to conform with the following parts of the 47 CFR 15 as detailed below:

Part 2	Part 15	Comment
	15.15(b)	There are no for the user accessible controls that increase transmission power above allowable levels.
	15.27	No special accessories are required for compliance.
	15.31(e)	Readings were taken at the fundamental frequency with the supply voltage varied with a $\pm 10\%$ range from the nominal voltage 24VDC, as specified by the product.
	15.203	The loop antenna is permanently attached to the transmitter and not accessible for the customer.
	15.205	The used fundamental frequency is not in a restricted band. All spurious emissions in the restricted bands comply with the radiated emission limits of 15.209.
	15.207 (c)	The product is DC powered and is connected to the AC power lines indirectly through another device.
	15.209	The radiated emission limits, general requirements of section 15.209 are kept.



Last page

Burgrieden. 07/21/2004



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