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Nemko Canada Inc., 303 River Road, R.R. 5, Ottawa, Ontario, Canada, K1V 1H2

Report Number: 138966-1TRFEMC

Product Marketing Name: Handheld Computer CE5000B series

Test Specification:

- FCC 47 CFR Part 15, Subpart B – Verification (USA)
- ICES-003 Issue 4 February 2004 (Canada)

Reviewed by: _____
Signature
Andrey Adelberg, Senior Wireless/EMC Specialist

December 15, 2009
Date

Tested by: Kevin Ma, EMC/Wireless Specialist

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303 River Road, R.R. 5, Ottawa, Ontario, Canada, K1V 1H2

Report No: 138966-1TRFEMC

Declaratory Statements

Product Marketing Name: Handheld Computer CE5000B series

Model #: 5000B9

Model variant #: 5000B2, 5000B3, 5000B4, 5000B5, 5000B6, 5000B7 and 5000B8



Trademark:

Serial #: FW06015

Applicant: DAP Technologies
875 Charest Boulevard West,
suite 200,
Québec City, QC
G1N 2C9 Canada

Manufacturer: DAP Technologies
875 Charest Boulevard West,
suite 200,
Québec City, QC
G1N 2C9 Canada

Product Background details

- | | |
|---|--|
| <input checked="" type="checkbox"/> New Product | <input type="checkbox"/> Engineering Changes |
| <input type="checkbox"/> Configuration Change | <input type="checkbox"/> Product Audit |
| <input type="checkbox"/> Other | |

Test Specification:

FCC 47 CFR Part 15, Subpart B – Verification (USA)
ICES-003 Issue 4 February 2004 (Canada)

Test Location: 303 River Road, R.R. 5, Ottawa, Ontario, Canada, K1V 1H2

Limits of Responsibility:

The results included in this test report apply only to the equipment listed within this report as being the Equipment Under Test (EUT). Equipment listed as support equipment is not considered to be part of the EUT. In some instances, the EUT may consist of multiple devices, and will be so indicated in the report.



Statement of Compliance

FCC 47 CFR Part 15, Subpart B for Digital Devices	TEST RESULT PASS/FAIL/NA
Radiated Disturbance	PASS
Conducted Disturbance at Mains Port	PASS
<ul style="list-style-type: none">- Test Method Used: ANSI C63.4-2003- System Power: 120 VAC / 60 Hz; Conducted: 120 VAC / 60 Hz- The equipment was tested for conducted emissions from 0.15 MHz to 30 MHz using a 50 μH line impedance stabilization network (L.I.S.N.) as described in ANSI C63.4-2003. Peripheral equipment was also operated through a 50 μH L.I.S.N.	
ICES-003 Issue 4 February 2004	TEST RESULT PASS/FAIL/NA
Radiated Disturbance	PASS
Conducted Disturbance at Mains Port	PASS
<ul style="list-style-type: none">- Test Method Used: CISPR 22- System Power: Radiated: 120 VAC / 60 Hz; Conducted: 120 VAC / 60 Hz- All tests were performed using measurement apparatus defined in CISPR 16-1.	

Measurement Uncertainty

Measurement	Test Specification	U _{lab}
Conducted disturbance	9–150 kHz	4.0 dB
	150–30 MHz	3.6 dB
Radiated disturbance	30–MHz <i>Horizontal polarization</i>	4.7 dB
	200–1000 MHz <i>Horizontal polarization</i>	4.7 dB
	30–200 MHz <i>Vertical polarization</i>	4.9 dB
	200–1000 MHz <i>Vertical polarization</i>	4.9 dB

Accuracy of Measurement

Measurement uncertainty was calculated using the methods described in CISPR 16-4 Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC measurements and Nemko Canada Inc. procedure EMC/MUC/001 Uncertainty in EMC Measurements.

Lab Environmental Conditions

Ambient Temperature: 15 °C to 35 °C,
Relative Humidity: 30 % to 60 %,
Atmospheric Pressure: 86 kPa (860 mbar) to 106 kPa (1 060 mbar)



Engineering Considerations

Product Modification Required for Compliance

None

Justification

The differences between 5000B9 and other models are listed as below;

Model #	2D Imager option	WIFI	Bluetooth	GPRS	RFID
5000B2					√
5000B3	√				√
5000B4		√	√		√
5000B5	√	√	√		√
5000B6				√	√
5000B7	√			√	√
5000B8		√	√	√	√
5000B9	√	√	√	√	√

Deviations from Standard Test Procedure

None

Test Report Revision History

Revision #	Details of changes made to test report
-	Original Report Issued
N/A	N/A



General Information Regarding the Equipment Under Test (EUT)

Date Received In Laboratory: November 25, 2009

Nemko Identification Number: Item 2

Description & Theory of Operation:

The EUT is a Lightweight Data Identification device. The CE5240BWE is specifically designed to transfer DAP Technologies mobile computing expertise into a featherweight field of Handheld devices. Meeting all expectations, it also offers the largest variety of customization hardware modules and features the most efficient, safe and cost-effective tools for all field workers.

EUT Clock and Operational Frequencies:
520 MHz

Exercise/Monitoring method:

Modemtester.exe : low-level modem control.
Gsm_PLMNSelect.exe : network selector
Standard Sierra Wireless USB driver
PSConfig.exe : Bluetooth Tx program
TM_Demo.exe : RFID Tx program
TM_Reader.dll : RFID Tx program

Software Version:

Microsoft Windows CE Version 5.00

Equipment Configuration

Equipment Configuration List

Item	Description	Identification: (MN#, SN#, PN#, Rev.)
(A)	Encompass 1d Handheld Reader	MN#: FW06105
(B)	CE 5000 Ethernet office cradle	MN#: FWC02538
(C)	DAP AC Adapter	MN#: TR36A-15 12A03, SN#: 0750

EUT Ports

Item	Description	Indoor/Outdoor	Type (See Legend)	Qty
i.	DC Power input (on item A)	Indoor	2	1
ii.	Power/signal port (on item A)	Indoor	2/3	1
iii.	DC Power input (on item B)	Indoor	2	1
iv.	Power/signal port (on item B)	Indoor	2/3	1
v.	Ethernet (on item B)	Indoor	3	1

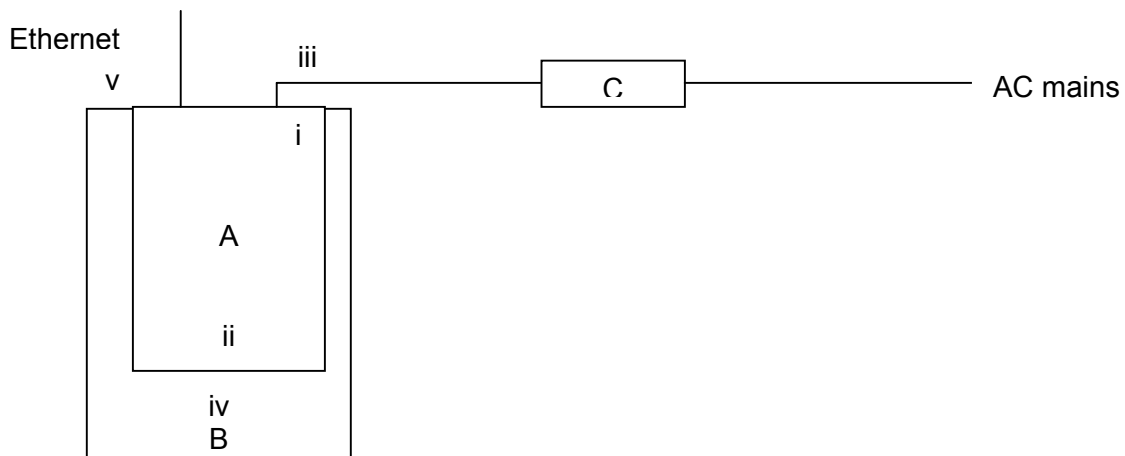
Inter-Connection Cables

Item	Description	Length (m)
(1)	Power line	2
(2)	LAN	3

Legend:

1 = AC Power Input/Output, 2 = DC Power Input/Output, 3 = Telecom, 4 = Non-telecom I/O, 5 = Maintenance, 6 = Fiber Optic

Configuration of the Equipment Under Test (EUT)





Radiated Disturbance

Test Date: November 26, 2009

Configuration: Table Top

Enclosure Investigation Data

Result: Refer to spectral plots and tables of this section.

Facility: 3 m Semi Anechoic Chamber **Measuring Distance:** 3 m **Antenna Height:** 1–4 m

Preview measurements:

30 MHz to 1 GHz

Receiver settings:

- Peak Detector, Max Hold
- 120 kHz RBW

1 GHz to 40 GHz

Spectrum analyzer settings:

- Peak Detector, Max Hold
- 1 MHz RBW/3MHz VBW

Final measurement:

30 MHz to 1 GHz

Receiver settings:

- Q-Peak Detector
- 120 kHz RBW

1 GHz to 40 GHz

Receiver settings:

- Average Detector
- 1 MHz RBW

- The spectral plot is a combined vertical and horizontal scan.
- Spectral plots have been corrected with transducer factors for antennas, cable loss, amplifiers, and attenuators.
- Limits have been adjusted to reflect 3 m measurements.
- The preview measurement was generated with receiver in continuous scan mode while the EUT was rotated and antenna adjusted for maximized radiated emission. Emissions detected within 6 dB of limit were re-measured with a quasi peak or average detector for a final measurement.

Notes

None

Deviations

None

Test Result

Final Test Result: Pass

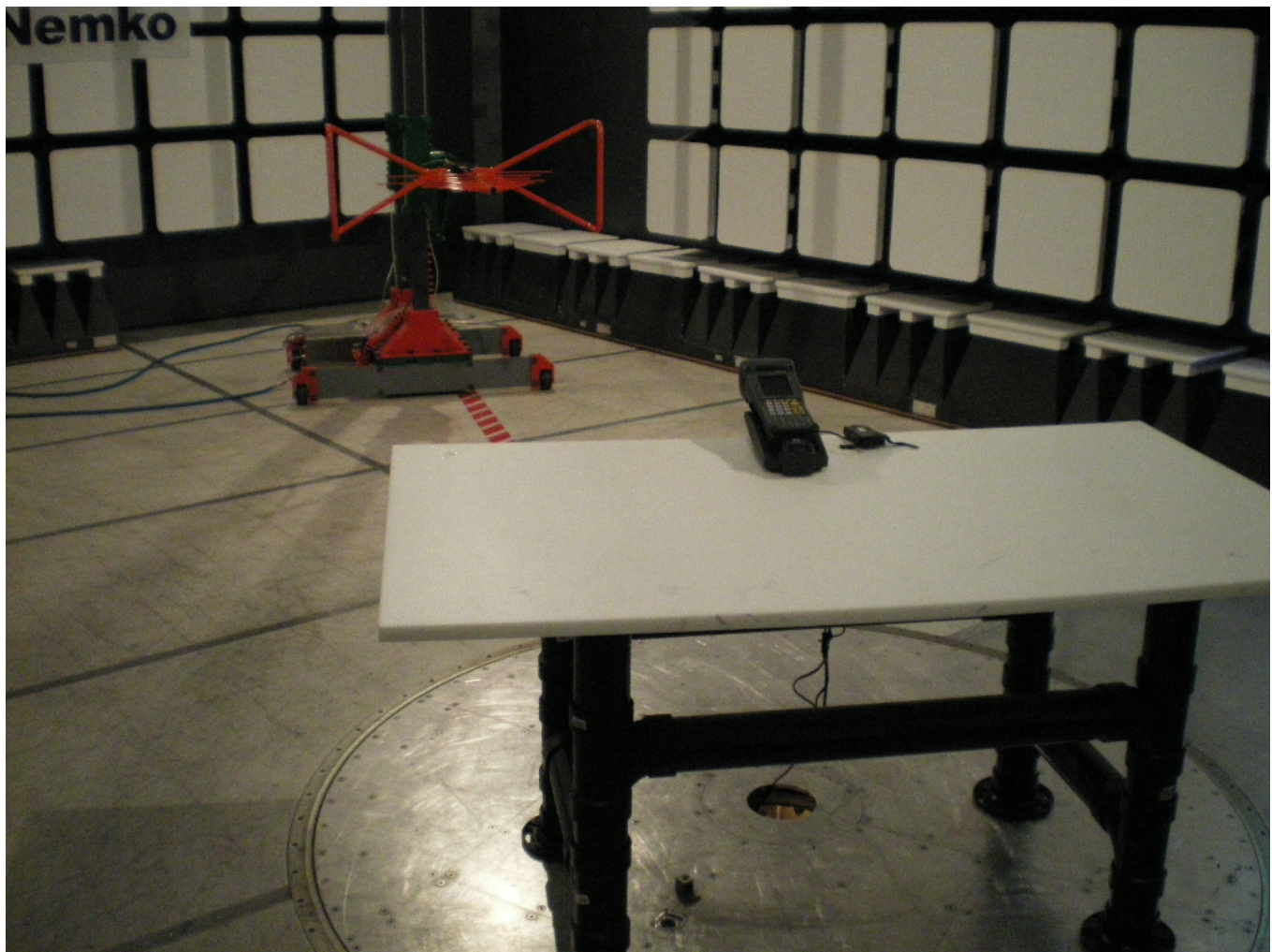
Radiated Disturbance, continued

Test Equipment Used

Equipment	Manufacturer	Model No.	Asset/Serial No.	Next Cal.
3 m EMI Test Chamber	TDK	SAC-3	FA002047	May 06/10
Bilog	Sunol	JB3	FA002108	Jan. 27/10
Flush Mount Turntable	Sunol	FM2022	FA002082	NCR
Horn Antenna #2	EMCO	3115	FA000825	Jan. 21/10
1 – 18 GHz Amplifier	JCA	JCA118-503	FA002091	Oct 7/10
Controller	Sunol	SC104V	FA002060	NCR
Mast	Sunol	TLT2	FA002061	NCR
50 Coax cable	HUBER + SUHNER	None	FA002015	Aug. 05/10
50 Coax cable	HUBER + SUHNER	None	FA002022	July 07/10
Receiver/Spectrum Analyzer	Rohde & Schwarz	ESU 26	FA002043	Dec. 16/09

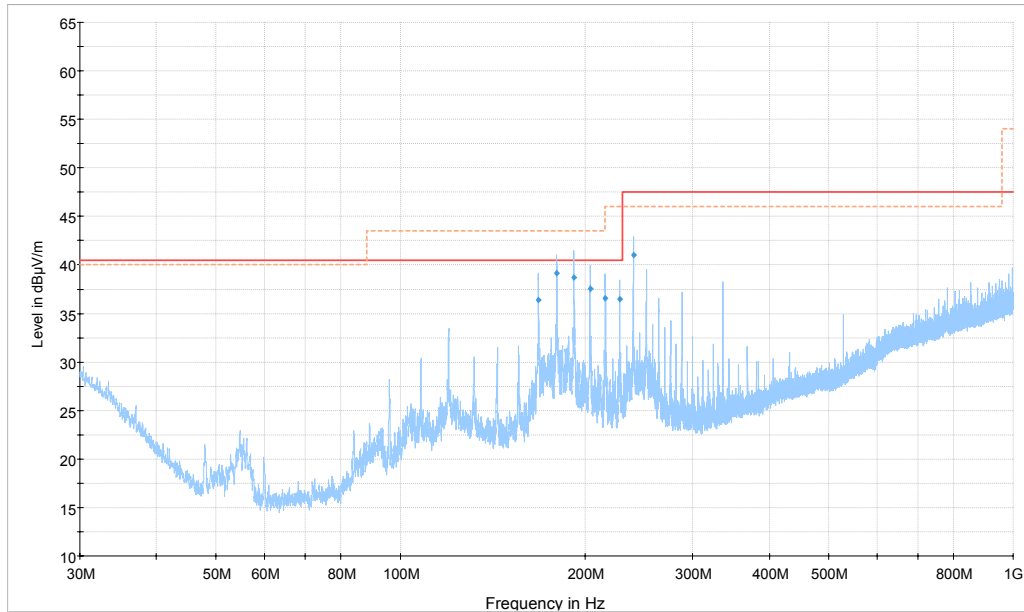
Note: N/A = Not Applicable, NCR = No Cal Required, COU = CAL On Use

Setup Photo

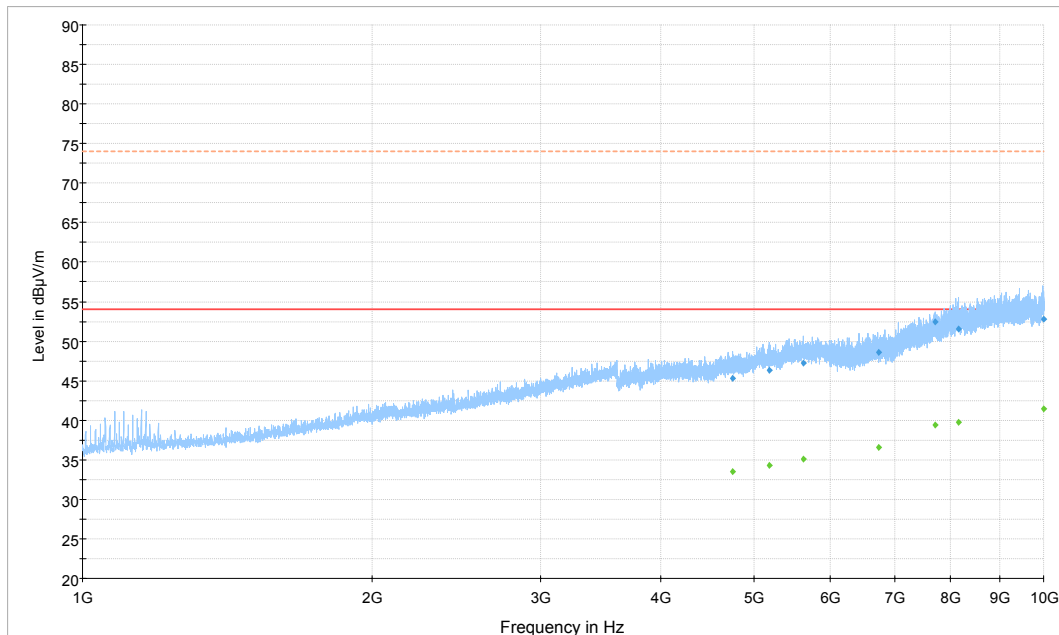


Radiated Disturbance, continued

Spectral Plots



— CISPR22 Class B QP 3m.LimitLine - - - - - FCC Part 15 Class B 3m QP+AV.LimitLine — Preview Result 1 ◆ Final Result 1



— FCC Part 15 Class B 3m QP+AV.LimitLine - - - - - FCC Part 15 Class B 3m Peak above 1GHz.LimitLine — Preview Result 1 ◆ Final Result 1 ◆ Final Result 2



Radiated Disturbance, continued

Tabular Data

ICES-003

Frequency (MHz)	Quasi Peak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height, m	Pol.	Correction (dB)	Margin (dB)	Limit (dB μ V/m)
168.000000	36.3	100.0	120.000	164.0	H	13.2	4.2	40.5
180.000000	39.2	100.0	120.000	179.0	H	12.4	1.3	40.5
192.000000	38.7	100.0	120.000	109.0	H	12.9	1.8	40.5
204.000000	37.5	100.0	120.000	145.0	H	13.1	3.0	40.5
216.000000	36.6	100.0	120.000	126.0	H	12.6	3.9	40.5
228.000000	36.5	100.0	120.000	114.0	H	13.1	4.0	40.5
240.000000	41.0	100.0	120.000	114.0	H	13.6	6.5	47.5

FCC Part 15 Subpart B

Frequency (MHz)	Quasi Peak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height, m	Pol.	Correction (dB)	Margin (dB)	Limit (dB μ V/m)
168.000000	36.3	100.0	120.000	164.0	H	13.2	7.2	43.5
180.000000	39.2	100.0	120.000	179.0	H	12.4	4.3	43.5
192.000000	38.7	100.0	120.000	109.0	H	12.9	4.8	43.5
204.000000	37.5	100.0	120.000	145.0	H	13.1	6.0	43.5
216.000000	36.6	100.0	120.000	126.0	H	12.6	6.9	43.5
228.000000	36.5	100.0	120.000	114.0	H	13.1	9.5	46.0
240.000000	41.0	100.0	120.000	114.0	H	13.6	5.0	46.0

Note: Correction factor includes antenna, cable loss, amplifier, and attenuators.

FCC Part 15 Subpart B

Frequency (MHz)	Average (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height, m	Pol.	Correction (dB)	Margin (dB)	Limit (dB μ V/m)
4746.68000	33.5	100.0	1000.000	98.0	H	-6.1	20.5	54.0
5181.45600	34.3	100.0	1000.000	98.0	V	-4.1	19.7	54.0
5623.33200	35.1	100.0	1000.000	98.0	V	-2.2	18.9	54.0
6728.30800	36.5	100.0	1000.000	98.0	V	0.6	17.5	54.0
7716.86400	39.4	100.0	1000.000	98.0	V	2.1	14.6	54.0
8157.77600	39.8	100.0	1000.000	98.1	V	1.7	14.2	54.0
9989.49200	41.4	100.0	1000.000	98.0	H	6.0	12.6	54.0

Note: Correction factor includes antenna, cable loss, amplifier, and attenuators.



Conducted Disturbance at Mains Port

Test Date: November 26, 2009

Configuration: Table Top

Port Investigation Data

Port under test: AC Adapter

Result: Refer to spectral plots and tables of this section.

Preview measurements:

0.15 MHz to 30 MHz

Receiver settings:

- Peak Detector, Max Hold and Average
- 9 kHz RBW

Final measurement:

0.15 MHz to 30 MHz

Receiver settings:

- Q-Peak Detector and Average
- 9 kHz RBW

- Spectral plots have been corrected for transducer factors; cable loss, LISN, and attenuator.
- Emissions detected within 6 dB of limit were re-measured with a quasi peak or average detector for a final measurement.

Notes

None

Deviations

None

Test Result

Final Test Result: Pass

Test Equipment Used

Equipment	Manufacturer	Model No.	Asset/Serial No.	Next Cal.
3 m EMI Test Chamber	TDK	SAC-3	FA002047	May 06/10
International Power Supply	California Inst.	3001i	FA001021	Jan. 13/10
50 Coax cable	HUBER + SUHNER	None	FA002015	Aug. 05/10
50 Coax cable	HUBER + SUHNER	None	FA002022	July 07/10
50 Coax cable	HUBER + SUHNER	None	FA002074	July 07/10
LISN	Rohde & Schwarz	ENV216	FA002023	Sept. 08/10
Receiver/Spectrum Analyzer	Rohde & Schwarz	ESU 26	FA002043	Dec. 16/09

Note: N/A = Not Applicable, NCR = No Cal Required, COU = CAL On Use

Conducted Disturbance at Mains, continued

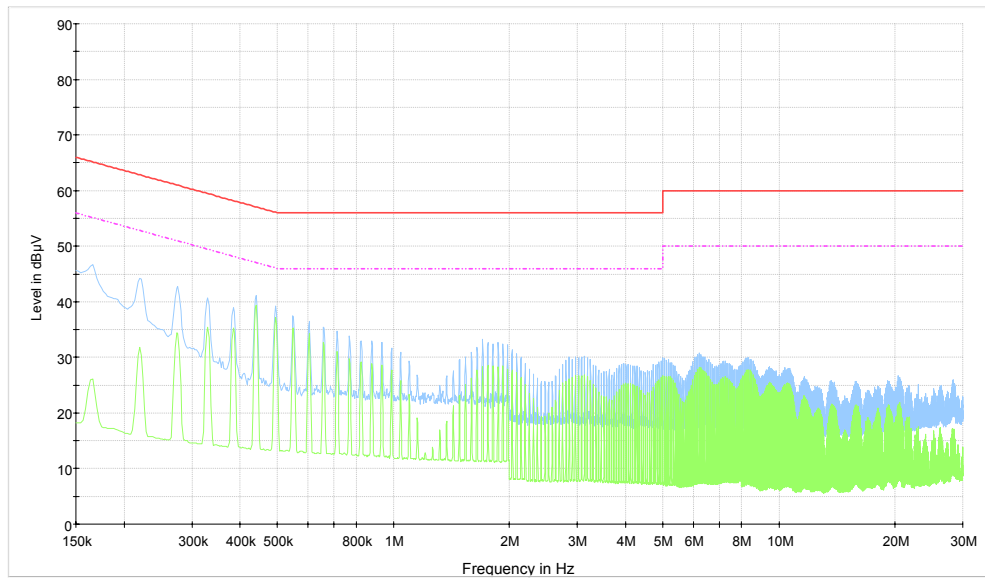
Setup Photo



Conducted Disturbance at Mains, continued

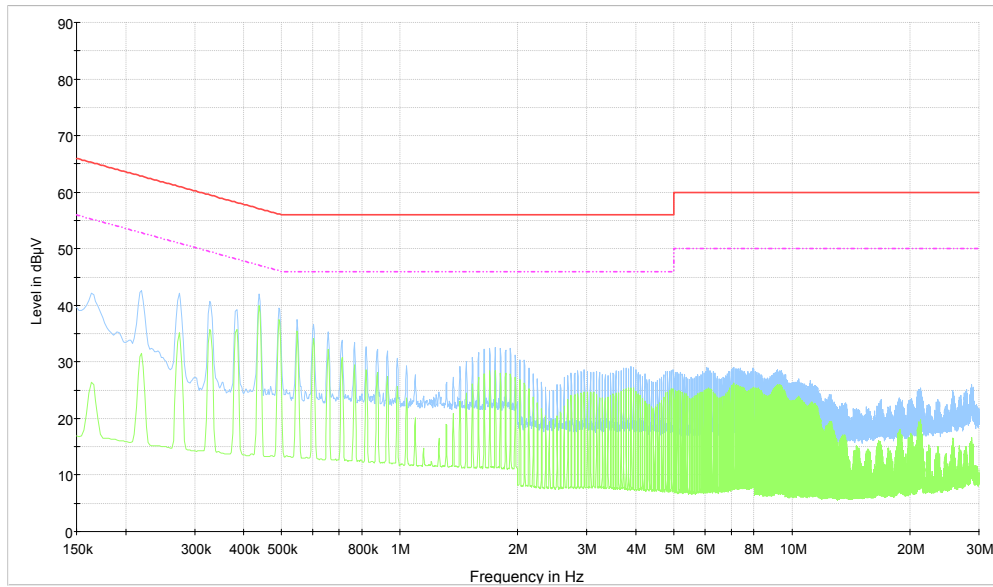
Spectral Plots

Phase:



— CISPR 22 Mains QP Class B.LimitLine — CISPR 22 Mains AV Class B.LimitLine — Preview Result 1 — Preview Result 2

Neutral:



— CISPR 22 Mains QP Class B.LimitLine — CISPR 22 Mains AV Class B.LimitLine — Preview Result 1 — Preview Result 2