EMI Test Report

Tested in accordance with
Federal Communications Commission (FCC)
Personal Communications Services
CFR 47, Parts 15, Subpart B
and
Industry Canada (IC), ICES-003

RIM Testing Services (RTS)

REPORT NO.: RTS-0101-0509-03

PRODUCT MODEL NO.: RAT40GW
TYPE NAME: BlackBerry Wireless Handheld
FCC ID: L6ARAT40GW
IC: 2503A-RAT40GW

Date: _____September 27, 2005_____

Statement of Performance:

The BlackBerry Wireless Handheld, model RAT40GW ASY-08757-001 and accessories when configured and operated per RIM's operation instructions, performs within the requirements of the test standards.

Declaration:

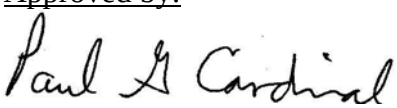
We hereby certify that:
The test data reported herein is an accurate record of the performance of the sample(s) tested.
The test results are valid for the tested unit (s) only.
The test equipment used was suitable for the tests performed and within manufacturer's published specifications and operating parameters.
The test methods were consistent with the methods described in the relevant standards.

Tested and Reviewed by:

Masud S. Attayi, P.Eng.

Date: September 27, 2005

Approved by:



Paul G. Cardinal, Ph.D.
Manager

Date: September 30, 2005

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A) **Scope**

This report details the results of compliance tests that were performed in accordance with the requirements of:
FCC CFR 47 Part 15, Subpart B, Dec. 08, 2003, Class B Digital Devices, Unintentional Radiators
IC ICES-003 Issue 3, Class B Digital Devices, Unintentional Radiators

B) **Associated Document**

1) Document number RTS-0101- RAT40GW-01

C) **Product Identification**

The equipment under test (EUT) was tested at the RIM Testing Services (RTS) EMI test facility, located at:

305 Phillip Street
Waterloo, Ontario
Canada, N2L 3W8
Phone: 519 888 7465
Fax: 519 888 6906

The testing began on August 26, 2005 and was completed on September 21, 2005. The sample EUT included:

1a. BlackBerry Wireless Handheld, model number RAT40GW, ASY-08757-001 Rev. R, POP-10133-003 Rev. E, PIN 2035B59C with LCD part number LCD-08818-001, FCC ID L6ARAT40GW, IC: 2503A-RAT40GW.
1b. BlackBerry Wireless Handheld, model number RAT40GW, ASY-08757-001 Rev. Q, POP-10133-002 Rev. E, PIN 20331BBD with LCD part number LCD-08818-002, FCC ID L6ARAT40GW, IC: 2503A-RAT40GW.
1c. BlackBerry Wireless Handheld, model number RAT40GW, ASY-08757-001 Rev. Q, POP-10133-002 Rev. E, PIN 20331B98 with LCD part number LCD-08818-001, FCC ID L6ARAT40GW, IC: 2503A-RAT40GW.
2. External Charger model number BCM6720A, part number ASY-07042-002 with a dc output of 4.2 volts, 0.75 amps for charging the internal battery and 5.1 volts, 0.75 amps for charging an external battery.

3. Folding Blade Charger, model number PSM04A-050RIM, part number ASY-07040-001 with an output voltage of 5.0 volts dc, 0.85 amps and attached USB cable with a lead length of 0.73 metres.
4. Rapid Charger, model number PSM08R-050RIM, part number ASY-07041-001 with an output voltage of 5.0 volts dc, 1.6 amps and attached USB cable with a lead length of 0.85 metres.
5. USB data cable, model number HDW-06610-001, 1.45 metres long.
6. Headset, model number HDW-03458-001. The lead length was 1.25 metres long.

The transmit frequency bands for the Handheld are: Cellular 824 to 849 MHz, PCS 1850 to 1910 MHz and Bluetooth 2402 to 2480 MHz.
To view the differences between ASY-08757-001 Rev. R and ASY-08757-001 Rev. Q see document number RTS-0101-RAT40GW-01.
Only the measurements that maybe impacted by the changes from ASY-08757-001 Rev. Q to ASY-08757-001 Rev. R were remeasured.

D) Support Equipment Used for the Testing of the EUT

1) PC System, Myraid, model EN-P3B-7, serial number CCC0004078
2) Monitor, ViewSonic, model number VCDTS23103-2M, serial number 24B022952648
3) Printer, H/P, model number C5884A, serial number US8251W0VQ

E) Test Voltage

The ac input voltage was 120 volts, 60 Hz where applicable. This configuration was per RIM's specifications.

F) Test Results Chart

SPECIFICATION	Test Type	MEETS REQUIREMENTS	Performed By
FCC CFR 47 Part 15, Subpart B IC ICES-003	Class B	Yes	Masud Attayi

G) Modifications to EUT

No modifications were required on the EUT.

H) **Summary of Results**

a) AC CONDUCTED EMISSIONS

The conducted emissions were measured using the test procedure outlined in CISPR Recommendation 22 through a 50 Ohm Line Impedance Stabilization Network (LISN), which was inserted in the power line to the equipment to provide the specified impedance for measurements. The EUT was placed on a nonconductive wooden table, 80 cm high that was positioned 40 cm from a vertical ground plane. The RF output of the network was connected to an EMI receiver system with characteristics that duplicate those of the receiver specified in CISPR Publication 16.
The following test configurations were measured:

1. The Handheld in battery charging mode, was connected via the detachable USB cable to the External Charger, part number ASY-07042-002. The ac input to the External Charger was 120 volts, 60 Hz.
2. The Handheld in battery charging mode was connected to the Folding Blade Charger, part number ASY-07040-001. The ac input to the Folding Blade Charger was 120 volts, 60 Hz.
3. The Handheld in battery charging mode was connected to the Rapid Charger, part number ASY-07041-001. The ac input to the Rapid Charger was 120 volts, 60 Hz.

The sample EUT's conducted emissions were compared with respect to the FCC CFR 47 Part 15, Subpart B (CISPR 22) and IC ICES-003, Class B limit.
The sample EUT had a worse case test margin of 17.53 dB below the limit at 1.090 MHz using the average detector with the Folding Blade Charger, test configuration 2 and 7.57 dB below the limit at 0.160 MHz using the quasi peak detector with the Rapid Charger, test configuration 3.

Measurement Uncertainty ±2.0 dB

To view the test data/plots, see APPENDIX 1.

b) RADIATED EMISSIONS

The radiated emissions from the EUT were measured using the methods outlined in CISPR Recommendation 22. The EUT was placed on a nonconductive styrofoam table, 80 cm high that was positioned on a remote controlled turntable. The test distance used between the EUT and the receiving antenna was three metres. The turntable was rotated to determine the azimuth of the peak emissions. Then the emissions were maximized by elevating the antenna in the range of 1 to 4 metres. The maximum emission level was recorded. The frequency range measured was from 30 MHz to 1.0 GHz. Both the horizontal and vertical polarisations of the emissions were measured.
The measurements were done in a semi-anechoic chamber. The semi-anechoic chamber FCC registration number is **778487** and the Industry Canada file number is **IC4240**.
The EUT was configured and operated to produce the maximum radiated emissions while still keeping within RIM's specifications.

The following test configurations were measured:

1. The Handheld model number RAT40GW, ASY-08757-001 Rev. R, POP-10133-003 Rev. E with LCD part number LCD-08818-001 in battery charging mode was connected to the External Charger, part number ASY-07042-002 via the detachable USB cable model number HDW-06610-001. The ac input was 120 volts, 60 Hz.
2. The Handheld model number RAT40GW, ASY-08757-001 Rev. Q, POP-10133-002 Rev. E with LCD part number LCD-08818-001 in battery charging mode was connected to the Folding Blade Charger, part number ASY-07040-001. The ac input was 120 volts, 60 Hz.
3. The Handheld model number RAT40GW, ASY-08757-001 Rev. Q, POP-10133-002 Rev. E with LCD part number LCD-08818-001 in battery charging mode was connected to the Rapid Charger, part number ASY-07041-001.
4. The Handheld model number RAT40GW, ASY-08757-001 Rev. Q, POP-10133-002 Rev. E with LCD part number LCD-08818-001 in idle mode was connected to the support PC via the USB data cable for charging and data link. The ac input was 120 volts, 60 Hz.
5. The Handheld model number RAT40GW, ASY-08757-001 Rev. Q, POP-10133-002 Rev. E with LCD part number LCD-08818-002 in battery charging mode was connected to the External Charger, part number ASY-07042-002 via the detachable USB cable model number HDW-06610-001. The ac input was 120 volts, 60 Hz.

The system's radiated emission levels in idle mode were compared with respect to the FCC CFR 47 Part 15, Subpart B and IC ICES-003, Class B limit.
The system met the requirements with a worse case emission test margin of 9.75 dB at 901.27 MHz with the Handheld in idle mode connected to the support PC via the USB data cable for charging and data link, test configuration 4.

Sample Calculation:

Field Strength (dBµV/m) is calculated as follows:
FS = Measured Level (dBµV) + A.F. (dB/m) + Cable Loss (dB) - Preamp (dB) + Filter Loss (dB)

Measurement Uncertainty ±4.0 dB

To view the test data see APPENDIX 2.

I) Compliance Test Equipment Used

UNIT	MANUFACTURER	MODEL	SERIAL NUMBER	CAL DUE DATE (YY MM DD)	USE
Preamplifier	Sonoma	310N/11909A	185831	05-11-26	Radiated Emissions
Preamplifier system	TDK RF Solutions	PA-02	080010	06-01-13	Radiated Emissions
EMI Receiver	Agilent	85462A	3942A00517	05-11-30	Conducted/Radiated Emissions
RF Filter Section	Agilent	85460A	3704A00481	05-11-30	Conducted/Radiated Emissions
Digital Multimeter	Hewlett Packard	34401A	US38042324	06-09-13	Conducted/Radiated Emissions
L.I.S.N.	Emco	3816/2	1120	06-08-18	Conducted Emissions
Impulse Limiter	Rohde & Schwarz	ESHS-Z2	836248/052	05-11-12	Conducted Emissions
Environment Monitor	Control Company	1870	230355190	06-01-11	Radiated Emissions
Hybrid Log Antenna	TDK	HLP-3003C	17401	06-07-21	Radiated Emissions

APPENDIX 1

AC CONDUCTED EMISSIONS TEST DATA/PLOTS

AC Conducted Emissions Test Results

August 28, 2005

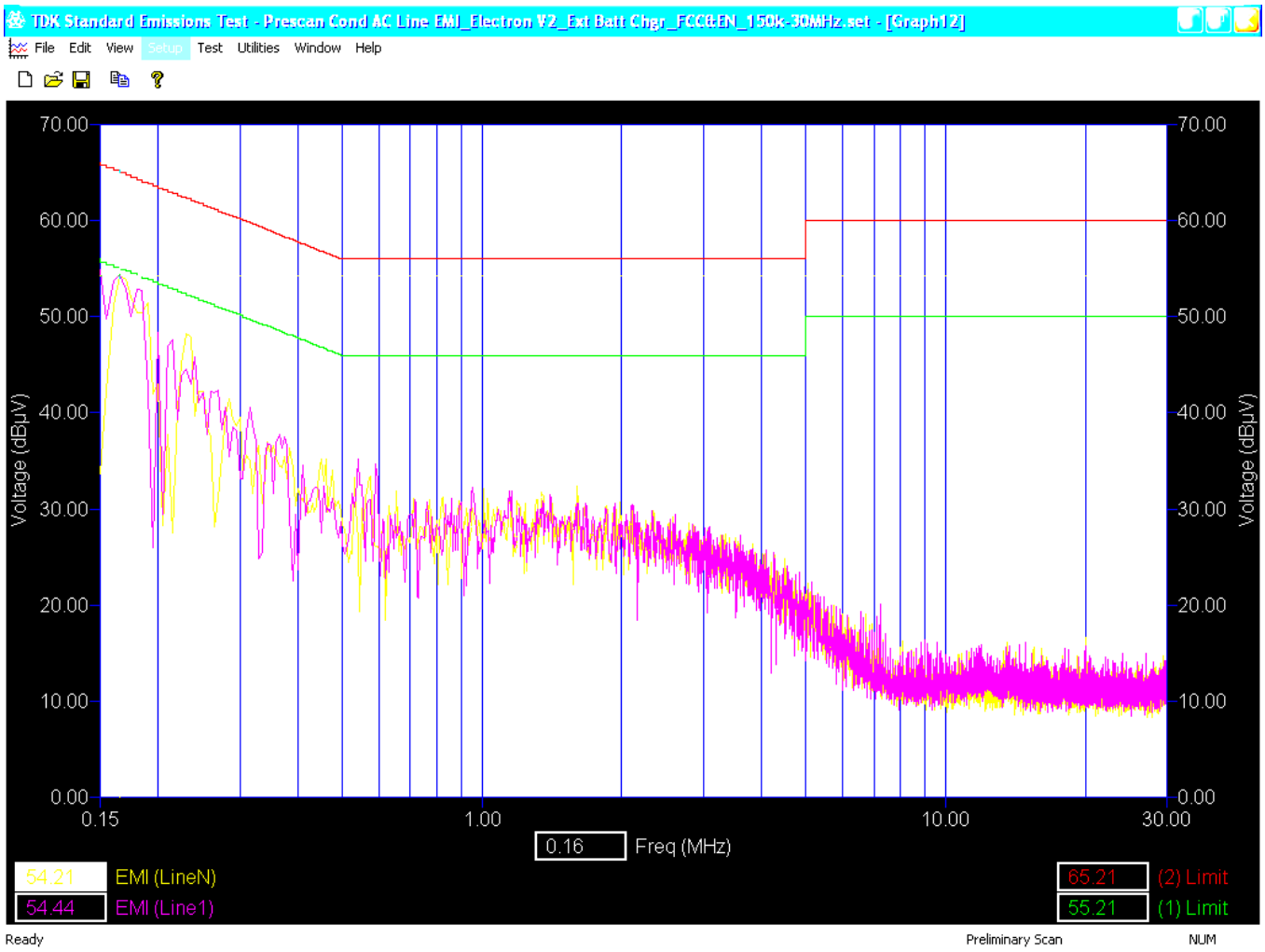
Test Configuration 1

FCC CFR 47 Part 15, Subpart B (CISPR 22), IC ICES-003, Class B

Frequency (MHz)	Line	Reading (QP) (dBµV)	Correction Factors for Impulse Limiter, LISN, Cable (dB)	QP Level (reading + Corr.Factor) (dB)	(QP) Limit (dBµV)	(AVG) Limit (dBµV)	Margin (QP) Limits (dB)	Margin (AVG) Limits (dB)
0.150	L1	41.38	9.98	51.36	66.00	56.00	-14.64	-4.64
0.165	N	36.91	9.98	46.89	65.21	55.21	-18.32	-8.32
0.165	L1	35.76	9.98	45.74	65.21	55.21	-19.47	-9.47
0.200	L1	40.67	9.98	50.65	63.61	53.61	-12.96	-2.96
0.215	L1	29.54	9.98	39.52	63.01	53.01	-23.49	-13.49
0.230	N	31.28	9.98	41.26	62.45	52.45	-21.19	-11.19
0.240	L1	30.88	9.98	40.86	62.10	52.10	-21.24	-11.24
0.270	L1	29.94	9.98	39.92	61.12	51.12	-21.20	-11.20
0.285	N	25.72	9.98	35.70	60.67	50.67	-24.97	-14.97
0.345	N	20.18	9.98	30.16	59.08	49.08	-28.93	-18.93
0.460	N	21.86	9.99	31.85	56.69	46.69	-24.84	-14.84
0.475	N	17.76	9.99	27.75	56.43	46.43	-28.67	-18.67

All other emission levels had a test margin of greater than 25 dB.
See graph 1 for the measurement plot.

AC Conducted Emissions Test Graph 1



Test Configuration 1

AC Conducted Emissions Test Results cont'd

August 28, 2005

Test Configuration 2

FCC CFR 47 Part 15, Subpart B (CISPR 22), IC ICES-003, Class B

Frequency (MHz)	Line	Reading (QP) (dBµV)	Correction Factors for Impulse Limiter, LISN, Cable (dB)	Level (QP) (reading + Corr.Factor) (dB)	Limit (QP) (dBµV)	Margin (QP) Limits (dB)
0.770	N	35.01	9.99	45.00	56.00	-11.00
0.775	L1	35.96	9.99	45.95	56.00	-10.05
0.855	N	33.2	10.00	43.20	56.00	-12.80
0.940	L1	33.9	10.01	43.91	56.00	-12.09
1.015	N	34.93	10.00	44.93	56.00	-11.07
1.090	L1	36.79	10.01	46.80	56.00	-9.20
1.095	N	35.73	10.01	45.74	56.00	-10.26
1.165	L1	33.55	10.01	43.56	56.00	-12.44
1.320	L1	35.92	10.02	45.94	56.00	-10.06
1.635	L1	34.78	10.04	44.82	56.00	-11.18
1.675	N	29.82	10.04	39.86	56.00	-16.14
2.235	N	32.14	10.07	42.21	56.00	-13.79

Measurements were done with the quasi-peak detector.
See graph 2 for the measurement plot.

AC Conducted Emissions Test Results cont'd

August 26, 2005

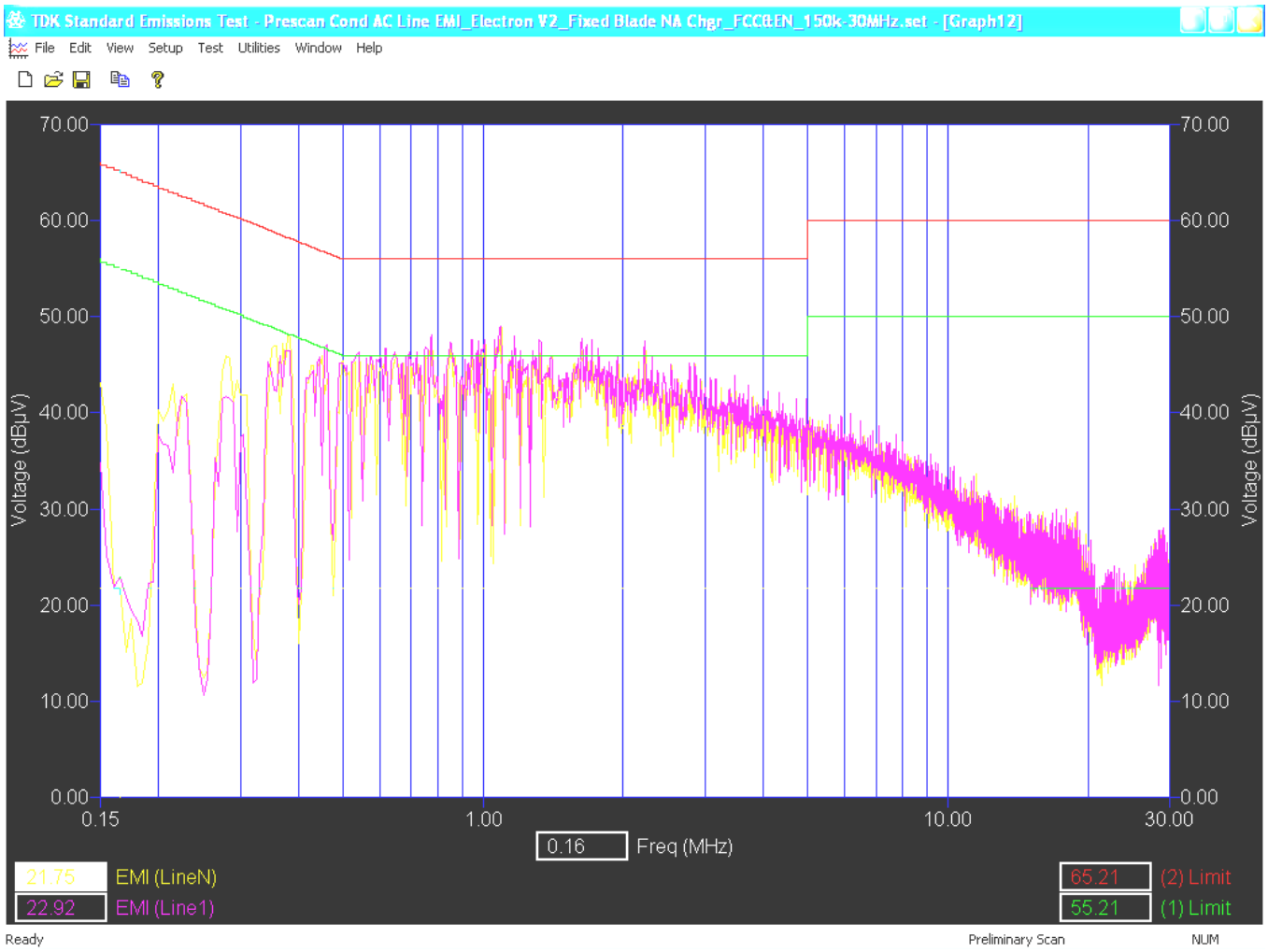
Test Configuration 2

FCC CFR 47 Part 15, Subpart B (CISPR 22), IC ICES-003, Class B

Frequency (MHz)	Line	Reading (AVE.) (dBµV)	Correction Factors for Impulse Limiter, LISN, Cable (dB)	Level (AVE.) (reading + Corr.Factor) (dB)	Limit (AVE.) (dBµV)	Margin (AVE.) Limits (dB)
0.770	N	17.60	9.99	27.59	46.00	-18.41
0.775	L1	18.35	9.99	28.34	46.00	-17.66
0.855	N	5.59	10.00	15.59	46.00	-30.41
0.940	L1	16.22	10.01	26.23	46.00	-19.77
1.015	N	17.75	10.00	27.75	46.00	-18.25
1.090	L1	18.46	10.01	28.47	46.00	**-17.53**
1.095	N	15.61	10.01	25.62	46.00	-20.38
1.165	L1	16.93	10.01	26.94	46.00	-19.06
1.320	L1	14.34	10.02	24.36	46.00	-21.64
1.635	L1	15.09	10.04	25.13	46.00	-20.87
1.675	N	9.99	10.04	20.03	46.00	-25.97
2.235	N	8.72	10.07	18.79	46.00	-27.21

Measurements were done with the average detector.
See graph 2 for the measurement plot.

AC Conducted Emissions Test Graph 2



Test Configuration 2

AC Conducted Emissions Test Results cont'd

September 20, 2005

Test Configuration 3

FCC CFR 47 Part 15, Subpart B (CISPR 22), IC ICES-003, Class B

Frequency (MHz)	Line	Reading (QP) (dBµV)	Correction Factors for Impulse Limiter, LISN, Cable (dB)	Level (QP) (reading + Corr.Factor) (dB)	Limit (QP) (dBµV)	Margin (QP) Limits (dB)
0.150	N	47.88	9.98	57.86	66.00	-8.14
0.160	L1	47.91	9.98	57.89	65.46	**-7.57**
0.165	N	46.25	9.98	56.23	65.21	-8.98
0.185	N	46.34	9.98	56.32	64.26	-7.94
0.190	L1	45.18	9.98	55.16	64.04	-8.88
0.200	N	43.95	9.98	53.93	63.61	-9.68
0.200	L1	45.69	9.98	55.67	63.61	-7.94
0.215	N	44.05	9.98	54.03	63.01	-8.98
0.215	L1	44.50	9.98	54.48	63.01	-8.53
0.235	N	43.78	9.98	53.76	62.27	-8.51
0.235	L1	43.84	9.98	53.82	62.27	-8.45
0.255	L1	43.15	9.98	53.13	61.59	-8.46

Measurements were done with the quasi-peak detector.
See graph 3 for the measurement plot.

AC Conducted Emissions Test Results cont'd

September 20, 2005

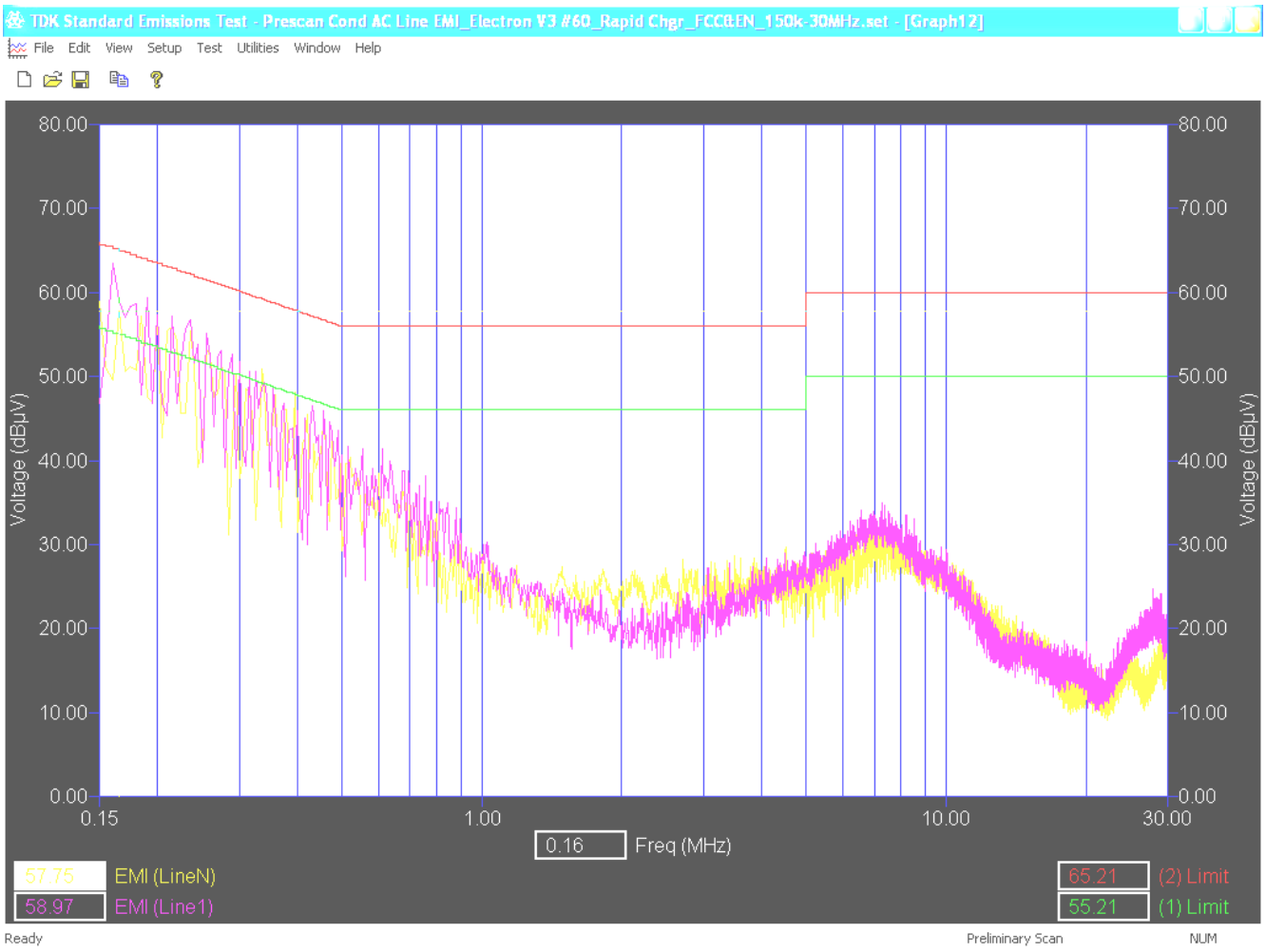
Test Configuration 3

FCC CFR 47 Part 15, Subpart B (CISPR 22), IC ICES-003, Class B

Frequency (MHz)	Line	Reading (AVE.) (dBµV)	Correction Factors for Impulse Limiter, LISN, Cable (dB)	Level (AVE.) (reading + Corr.Factor) (dB)	Limit (AVE.) (dBµV)	Margin (AVE.) Limits (dB)
0.150	N	19.65	9.98	29.63	56.00	-26.37
0.160	L1	18.01	9.98	27.99	55.46	-27.47
0.165	N	17.07	9.98	27.05	55.21	-28.16
0.185	N	18.99	9.98	28.97	54.26	-25.29
0.190	L1	17.84	9.98	27.82	54.04	-26.22
0.200	N	15.64	9.98	25.62	53.61	-27.99
0.200	L1	13.29	9.98	23.27	53.61	-30.34
0.215	N	11.69	9.98	21.67	53.01	-31.34
0.215	L1	12.13	9.98	22.11	53.01	-30.90
0.235	N	13.40	9.98	23.38	52.27	-28.89
0.235	L1	9.97	9.98	19.95	52.27	-32.32
0.255	L1	5.97	9.98	15.95	51.59	-35.64

Measurements were done with the average detector.
See graph 3 for the measurement plot.

AC Conducted Emissions Test Graph 3



Test Configuration 3

APPENDIX 2

RADIATED EMISSIONS TEST DATA

Radiated Emissions Test Results

Test Configuration 1

FCC CFR 47 Part 15, Subpart B, Class B — September 19, 2005

Test Distance was 3.0 metres.

Frequency (MHz)	Antenna Pol. (V/H)	Antenna Height (metres)	Test Angle (Deg.)	Detector (Q.P. or Peak)	Measured Level (dBµV)	Correction Factors for preamp/antenna/cables/ filter (dB/m)	Field Strength Level (reading+corr.) (dBµV/m)	Limit @ 3.0 m (dBµV/m)	Test Margin (dB)
44.98	V	1.46	170	Q.P.	28.01	-21.47	16.54	40.00	-23.46
130.25	V	1.58	305	Q.P.	40.94	-18.06	22.88	43.50	-20.62
848.05	V	1.90	73	Q.P.	21.20	-1.09	20.11	46.00	-25.89
861.01	V	1.85	162	Q.P.	21.32	-1.02	20.30	46.00	-25.70
892.96	H	3.13	93	Q.P.	20.86	-0.52	20.34	46.00	-25.66
894.38	V	3.68	273	Q.P.	20.57	-0.51	20.06	46.00	-25.94
918.65	H	3.66	17	Q.P.	21.03	-0.16	20.87	46.00	-25.13
935.92	V	2.91	189	Q.P.	20.88	0.19	21.07	46.00	-24.93

All other emission levels had a test margin of greater than 25 dB.

Radiated Emissions Test Results cont'd

Test Configuration 2

FCC CFR 47 Part 15, Subpart B, Class B — September 25, 2005

Test Distance was 3.0 metres.

Frequency (MHz)	Antenna Pol. (V/H)	Antenna Height (metres)	Test Angle (Deg.)	Detector (Q.P. or Peak)	Measured Level (dBµV)	Correction Factors for preamp/antenna/cables/ filter (dB/m)	Field Strength Level (reading+corr.) (dBµV/m)	Limit @ 3.0 m (dBµV/m)	Test Margin (dB)
30.01	H	2.00	87	Q.P.	35.67	-17.82	17.85	40.00	-22.15
63.32	H	0.98	194	Q.P.	36.34	-22.10	14.24	40.00	-25.76
926.92	H	2.22	109	Q.P.	20.42	-0.02	20.40	46.00	-25.60
928.37	V	3.89	196	Q.P.	20.30	-0.01	20.29	46.00	-25.71

All other emission levels had a test margin of greater than 25 dB.

Radiated Emissions Test Results cont'd

Test Configuration 3

FCC CFR 47 Part 15, Subpart B, Class B — September 25, 2005

Test Distance was 3.0 metres.

Frequency (MHz)	Antenna Pol. (V/H)	Antenna Height (metres)	Test Angle (Deg.)	Detector (Q.P. or Peak)	Measured Level (dBµV)	Correction Factors for preamp/antenna/cables/ filter (dB/m)	Field Strength Level (reading+corr.) (dBµV/m)	Limit @ 3.0 m (dBµV/m)	Test Margin (dB)
69.14	H	4.00	90	Q.P.	44.41	-21.66	22.75	40.00	-17.25
81.27	V	1.42	232	Q.P.	44.90	-20.77	24.13	40.00	-15.87
124.72	H	2.82	120	Q.P.	36.48	-18.32	18.16	43.50	-25.34

All other emission levels had a test margin of greater than 25 dB.

Radiated Emissions Test Results cont'd

Test Configuration 4

FCC CFR 47 Part 15, Subpart B, Class B September 26, 2005

Test Distance was 3.0 metres.

Frequency (MHz)	Antenna Pol. (V/H)	Antenna Height (metres)	Test Angle (Deg.)	Detector (Q.P. or Peak)	Measured Level (dBµV)	Correction Factors for preamp/antenna/cables/ filter (dB/m)	Field Strength Level (reading+corr.) (dBµV/m)	Limit @ 3.0 m (dBµV/m)	Test Margin (dB)
30.01	V	1.40	8	Q.P.	38.29	-17.79	20.50	40.00	-19.50
38.13	V	1.61	45	Q.P.	42.75	-20.00	22.75	40.00	-17.25
44.03	H	3.26	176	Q.P.	45.75	-21.30	24.45	40.00	-15.55
59.11	V	1.87	44	Q.P.	44.44	-22.35	22.09	40.00	-17.91
63.90	V	1.78	350	Q.P.	47.29	-22.04	25.25	40.00	-14.75
172.86	H	1.85	13	Q.P.	46.42	-17.83	28.59	43.50	-14.91
181.85	H	1.82	358	Q.P.	38.45	-17.43	21.02	43.50	-22.48
201.35	H	1.27	105	Q.P.	44.54	-14.73	29.81	43.50	-13.69
402.65	H	1.89	125	Q.P.	43.18	-10.22	32.96	46.00	-13.04
634.37	V	1.40	23	Q.P.	30.64	-5.66	24.98	46.00	-21.02
901.27	V	1.45	13	Q.P.	36.75	-0.50	36.25	46.00	**-9.75**

All other emission levels had a test margin of greater than 25 dB.

Radiated Emissions Test Results cont'd

Test Configuration 5

FCC CFR 47 Part 15, Subpart B, Class B — September 21, 2005

Test Distance was 3.0 metres.

Frequency (MHz)	Antenna Pol. (V/H)	Antenna Height (metres)	Test Angle (Deg.)	Detector (Q.P. or Peak)	Measured Level (dBµV)	Correction Factors for preamp/antenna/cables/ filter (dB/m)	Field Strength Level (reading+corr.) (dBµV/m)	Limit @ 3.0 m (dBµV/m)	Test Margin (dB)
122.63	H	3.17	265	Q.P.	36.48	-18.42	18.06	43.50	-25.44
125.94	H	1.76	250	Q.P.	40.20	-18.25	21.95	43.50	-21.55
130.36	V	1.40	296	Q.P.	40.58	-18.06	22.52	43.50	-20.98
130.41	H	3.01	65	Q.P.	37.31	-18.06	19.25	43.50	-24.25
139.30	V	1.40	359	Q.P.	38.06	-17.96	20.10	43.50	-23.40

All other emission levels had a test margin of greater than 25 dB.