EMI Test Report

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

A division of Research In Motion Limited

REPORT NO.: RTS-5992-1203-24B

PRODUCT MODEL NO.: REV71UW, RFE71UW
TYPE NAME: BlackBerry® smartphone
FCC ID: L6AREV70UW, L6ARFE70UW
IC: 2503A-REV70UW, 2503A-RFE70UW

DATE: August 08, 2012

Statement of Performance:

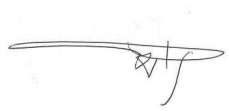
The BlackBerry® smartphone, model REV71UW, part number CER-48924-001 Rev1 and accessories when configured and operated per RIM's operation instructions, and performs within the requirements of the test standards.

The BlackBerry® smartphone, model RFE71UW, part number CER-49842-001 Rev1, and its accessories perform within the requirements of the test standards when configured and operated under RIM's operation instructions.

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.

Documented by:



Feras Obeid
Regulatory Compliance Associate
Date: August 08, 2012

Reviewed by:

Savtej S. Sandhu
Regulatory Compliance Specialist
Date: August 08, 2012

Reviewed and Approved by:

Masud S. Attayi, P.Eng.
Manager, Regulatory Compliance
Date: August 08, 2012

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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, October, 2011 Class B Digital Devices, Unintentional Radiators
- IC ICES-003 Issue 4, February 2004, Class B Digital Devices, Unintentional Radiators

B. Associated Documents

- BlackBerrySystemSimilarity_REV71UW_RFE71UW.

C. Product Identification

Manufactured by Research In Motion Limited whose headquarters is located at:
295 Phillip Street
Waterloo, Ontario
Canada, N2L 3W8
Phone: 519 888 7465
Fax: 519 888 6906

The equipment under test (EUT) was tested at the following locations:

RIM Testing Services EMI test facilities

305 Phillip Street	440 Phillip Street
Waterloo, Ontario	Waterloo, Ontario
Canada, N2L 3W8	Canada, N2L 5R9
Phone: 519 888 7465	Phone: 519 888 7465
Fax: 519 888 6906	Fax: 519 888 6906

The testing was performed from March 5 to March 13 and March 19, 2012.

The sample EUT included:

SAMPLE	MODEL	CER NUMBER	PIN	Software
1	REV71UW	CER-48924-001 Rev 1	295B07DA	V7.1.0.285 Bundle 876 Platform: 9.0.0.427
2	REV71UW	CER-48924-001 Rev 1	295B0784	V7.1.0.285 Bundle 876 Platform: 9.0.0.427

AC conducted testing was performed on sample 2.
Radiated Emissions testing was performed on sample 1.

Only the characteristics that may have been affected by the changes from model REV71UW to RFE71UW were re-tested. For more information, see BlackBerrySystemSimilarity_REV71UW_RFE71UW.

BlackBerry® smartphone Accessories Tested

1) Fixed Blade Charger, part number HDW-24481-001 (model number RIM-C-4ADUUS-001) with an output voltage of 5.0 Vdc and an output current of 750 mA.
2) Alt. Fixed Blade Charger, part number HDW-24481-001 (model number PSM04A-050QRIM) with an output voltage of 5.0 Vdc and an output current of 750 mA.
3) Alt.1 Fixed Blade, part number HDW-44303-001 (model number PSM03A-050Q-1 RIM), with an output voltage of 5.0 Vdc and an output current of 550 mA.
4) Alt.2 Fixed Blade, part number HDW-47725-001 (model number RIM-C-0004DUUS), with an output voltage of 5.0 Vdc and an output current of 850 mA.
5) Wired Stereo Headset, part number HDW-14322-005, 1.4 metres long.
6) Wired Headset, part number HDW-44306-001, with a lead length of 1.1 metres.
7) Alt. Wired Headset, part number HDW-44306-001, with a lead length of 1.1 metres.
8) Legacy Micro-USB Cable, part number HDW-06610-009, 1.0 metre long.
9) Micro-USB Cable T, part number HDW-48415-001, 1.0 metre long.
10) Micro-USB Cable T, part number HDW-46740-001, 1.2 metre long.
11) Micro-USB Cable TCS, part number HDW-46740-001, 1.2 metres long.
12) Micro-USB Cable TCRS, part number HDW-46740-001, 1.2 metres long.
13) Micro-USB Cable T HL, part number HDW-46740-001, 1.2 metres long.
14) USB Y-Cable, part number HDW-19137-002, lead lengths of 11 cm and 26 cm.
15) Alt. USB Y-Cable, part number HDW-19137-002, lead lengths of 11 cm and 26 cm.
16) External Battery Charger, part number HDW-24478-001.
17) JS1 Battery, part number BAT-44582-001.
18) Alt. JS1 Battery, part number BAT-44582-002.

D. Support Equipment Used for the Testing of the EUT

1) IBM Thinkpad Lenovo T60p laptop, type 8742-C2U, product ID 8742C2U

E. Summary of Results

SPECIFICATION		TEST TYPE	Meets Requirement	Test Data APPENDIX
FCC CFR 47	IC			
Part 15, Subpart B	ICES-003	Conducted AC Line Emission	Yes	1
Part 15, Subpart B	ICES-003	Radiated Unintentional Spurious Emissions	Yes	2

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. BlackBerry® smartphone was in battery charging mode. The input voltage was 120 V, 60 Hz.

The following test configurations were measured for model REV71UW:

Test Configuration	Operating Mode(s)	Charger + Accessories
1	GSM 850 Idle, Audio Playback	Fixed Blade, Wired Stereo Headset, 1.0m Legacy USB Cable
2	GSM1900 Idle, Video Playback	Alt. Fixed Blade, Wired Headset, 1.0m USB Cable T
3	UMTS 2 Idle	Alt.1 Fixed Blade, Alt. Wired Headset, 1.2m USB Cable T
4	FM Radio	Alt. Fixed Blade, Alt. Wired Headset,1.2m USB Cable TCS
5	UMTS 5 Idle,	Fixed Blade, Wired Stereo Headset,1.2m USB Cable TCRS, USB Y-Cable, external battery charger
6	GSM 850 Idle, Audio Playback	Fixed Blade, Wired Stereo Headset, 1.2m USB Cable THL
7	GSM1900 Idle, Audio Playback	Alt.2 Fixed Blade, Wired Headset, 1.0m Legacy USB Cable
8	UMTS 2 Idle, Audio Playback	Alt.2 Fixed Blade, Wired Stereo Headset,1.0m Legacy USB Cable, Alt. USB Y-Cable, external battery charger

The sample EUT's conducted emissions were compared with respect to the FCC CFR 47 Part 15, Subpart B, and IC ICES-003, Class B limit. The sample EUT had a worst test case margin of 8.73 dB below the QP limit at 1.811 MHz using the QP detector in Test Configuration 3. The sample EUT had a worst test case margin of 13.40 dB below the Average limit at 1.811 MHz using the Average detector in Test Configuration 3.

Measurement Uncertainty ±3.0 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 5.0 GHz. Both the horizontal and vertical polarizations of the emissions were measured.

The measurements were done in a semi-anechoic chamber. The FCC registration number is **778487** and the Industry Canada(IC) file number is **2503B-1**. The EUT was configured and operated to produce the maximum radiated emissions while still keeping within RIM's specifications.

The BlackBerry® smartphone was in battery charging mode for all configurations. The ac input voltage was 120V, 60Hz.

The following test configurations were measured for model REV71UW:

Test Configuration	Operating Mode(s)	Charger + Accessories
1	GSM 850 Idle, Audio Playback	Fixed Blade, Wired Stereo Headset,1.0m Legacy USB Cable
2	PCS 1900 Idle, Video Playback	Alt. Cobra Fixed Blade, Wired Headset,1.0m USB Cable T
3	FM Radio	Alt.1 Fixed Blade, Alt. Wired Headset, 1.2m USB Cable T
4	UMTS 2 Idle	Alt. Wired Headset,1.2m USB Cable TCS, IBM Thinkpad Lenovo T60p laptop
5	UMTS 5 Idle,	Fixed Blade, Wired Stereo Headset,1.2m USB Cable TCRS, USB Y-Cable, external battery charger
6	GSM 850 Idle, Audio Playback	Alt.2 Fixed Blade, Wired Stereo Headset,1.0m USB Cable THL
7	UMTS 2 Idle, Audio Playback	Alt.2 Fixed Blade, Wired Stereo Headset,1.0m Legacy USB Cable, Alt. USB Y-Cable, external battery charger

The system's radiated emission levels 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 worst test case emission margin of 7.14 dB below the QP limit at 169.30 MHz using quasi-peak detector in Test Configuration 7.

To view the test data see APPENDIX 2.

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 ±4.6 dB

F. Compliance Test Equipment Used

UNIT	MANUFACTURER	MODEL	SERIAL NUMBER	CAL DUE DATE (YY MM DD)	USE
Preamplifier	Sonoma	310N/11909A	185831	12-10-17	Radiated Emissions
Preamplifier system	TDK RF Solutions	PA-02	080010	12-10-17	Radiated Emissions
EMC Analyzer	Rohde & Schwarz	ESIB 40	3942A00517	12-12-08	Radiated Emissions
Digital Multimeter	Hewlett Packard	34401A	US36042324	12-11-16	Conducted/Radiated Emissions
T/RH Meter	OMEGA	iTHX-SD	0380561	12-10-20	Radiated Emission
T/RH Meter	OMEGA	iTHX-SD	0380567	12-10-20	Radiated Emission
L.I.S.N.	Rohde & Schwarz	ENV216	100060	13-10-25	Conducted Emissions
Hybrid Log Antenna	EMC Automation	HLP-3003C	017401	13-08-23	Radiated Emissions
Horn Antenna	EMC Automation	HRN-0118	030101	12-07-20*	Radiated Emissions
Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	112394	12-11-30	Radiated Emissions
Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	112395	12-11-21	Radiated/Conducted Emissions
EMI Test Receiver	Rohde & Schwarz	ESU 40	100162	12-12-07	Radiated/Conducted Emissions
Bluetooth Tester	Rohde & Schwarz	CBT	100368	12-12-01	Radiated Emissions
Bluetooth Tester	Rohde & Schwarz	CBT	100370	12-12-01	Radiated/Conducted Emissions

*This test equipment was only used for testing before the Cal due date of 12-07-20

APPENDIX 1 - AC CONDUCTED EMISSIONS TEST DATA

AC Conducted Emissions Test Results

The following test configurations were measured for model REV71UW.

The following tests were performed by Savtej Sandhu.

Test Configuration 1

Date of the test: March 5, 2012
The environmental conditions were: Temperature: 24.9 °C
Humidity: 38.8 %

Frequency (MHz)	Line	Reading (QP) (dBµV)	Correction Factor (dB)	Corrected Reading (QP) (dBµV)	Limit (QP) (dBµV)	Limit (AV) (dBµV)	Margin (QP) Limits (dB)
0.213	L1	29.79	10.77	40.55	63.10	53.10	-22.55
0.407	L1	29.93	10.00	39.93	57.70	47.70	-17.77
0.461	L1	23.82	9.93	33.75	56.70	46.70	-22.95
1.050	L1	26.42	9.80	36.22	56.00	46.00	-19.78
0.159	N	33.69	11.17	44.86	65.50	55.50	-20.64
3.449	N	22.10	9.89	31.99	56.00	46.00	-24.01
3.912	N	22.51	9.90	32.41	56.00	46.00	-23.59
4.425	N	25.66	9.91	35.57	56.00	46.00	-20.43
4.992	N	23.03	9.91	32.94	56.00	46.00	-23.06

All other emission levels had test margins of greater than 25 dB.
Measurements were done with the quasi-peak detector.

See figure 1-1 and figure 1-2 for the measurement plot of the L1 and N lines of AC power line conducted emissions.

AC Conducted Emissions Test Graphs

Test Configuration 1

Figure 1-1: L1 lines

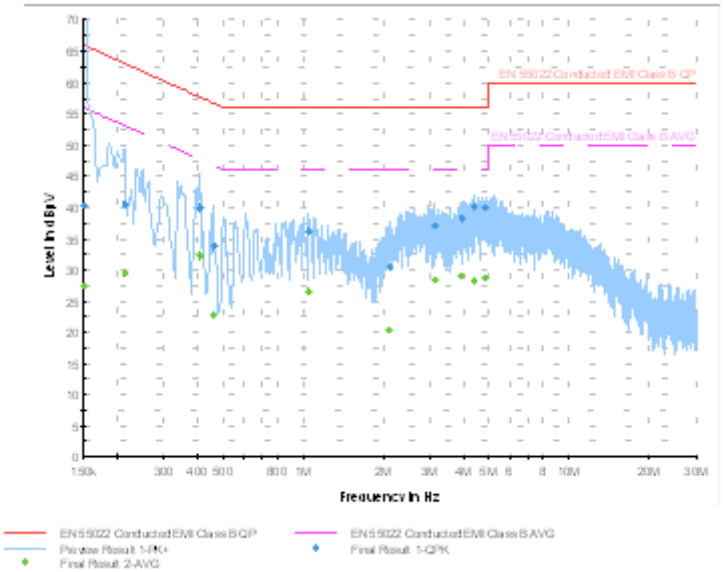
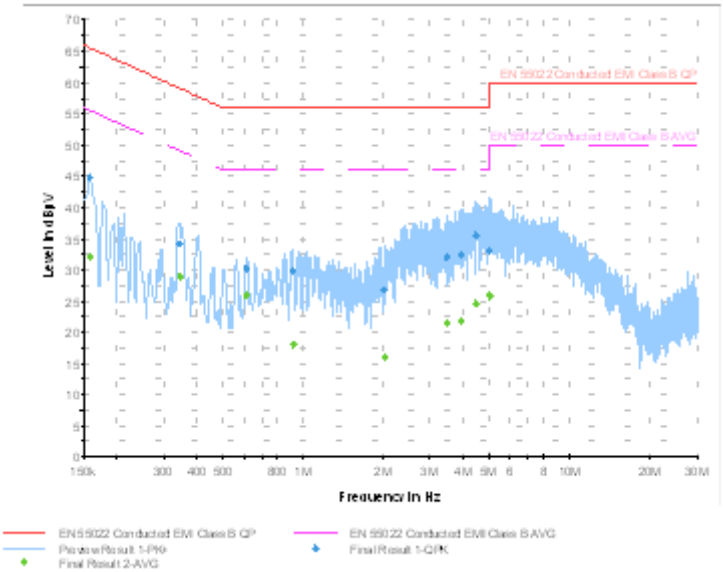


Figure 1-2: N Lines



AC Conducted Emissions Test Results cont'd

Test Configuration 2

Date of the test: March 5, 2012
The environmental conditions were: Temperature: 24.8 °C
Humidity: 37.8 %

Frequency (MHz)	Line	Reading (QP) (dBµV)	Correction Factor (dB)	Corrected Reading (QP) (dBµV)	Limit (QP) (dBµV)	Limit (AV) (dBµV)	Margin (QP) Limits (dB)
0.150	L1	33.11	11.20	44.32	66.00	56.00	-21.68
0.272	L1	27.52	10.36	37.88	61.10	51.10	-23.22
0.551	L1	30.99	9.88	40.87	56.00	46.00	-15.13
0.987	L1	27.18	9.80	36.98	56.00	46.00	-19.02
1.365	L1	27.29	9.80	37.09	56.00	46.00	-18.91
2.661	L1	22.10	9.86	31.96	56.00	46.00	-24.05
3.903	L1	21.39	9.90	31.29	56.00	46.00	-24.72
10.662	L1	30.85	9.97	40.82	60.00	50.00	-19.18
11.769	L1	30.75	10.01	40.76	60.00	50.00	-19.24
0.150	N	30.52	11.23	41.76	66.00	56.00	-24.24
0.308	N	25.67	10.17	35.84	60.00	50.00	-24.17
0.560	N	29.65	9.89	39.54	56.00	46.00	-16.46
1.194	N	23.88	9.80	33.68	56.00	46.00	-22.32
1.311	N	21.65	9.80	31.45	56.00	46.00	-24.55
10.302	N	25.77	9.98	35.74	60.00	50.00	-24.26
11.157	N	27.22	10.00	37.22	60.00	50.00	-22.79

All other emission levels had test margins of greater than 25 dB.
Measurements were done with the quasi-peak detector.

See figure 1-3 and figure 1-4 for the measurement plot of the L1 and N lines of AC power line conducted emissions.

AC Conducted Emissions Test Graphs

Test Configuration 2

Figure 1-3: L1 lines

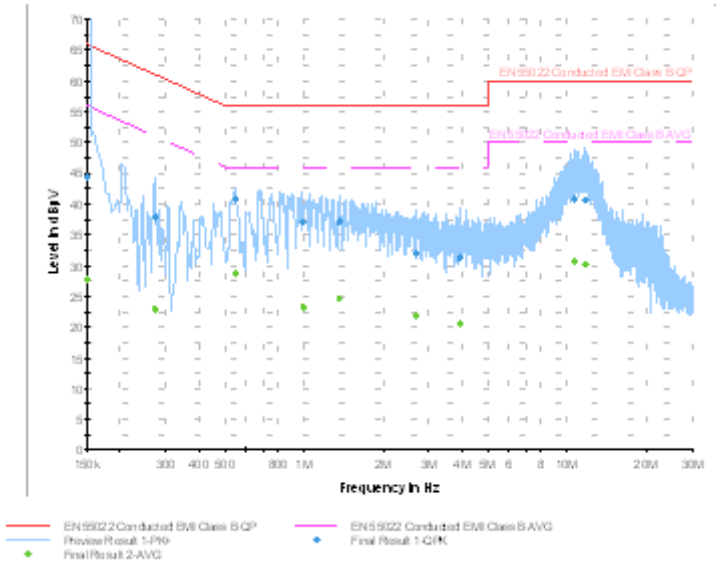
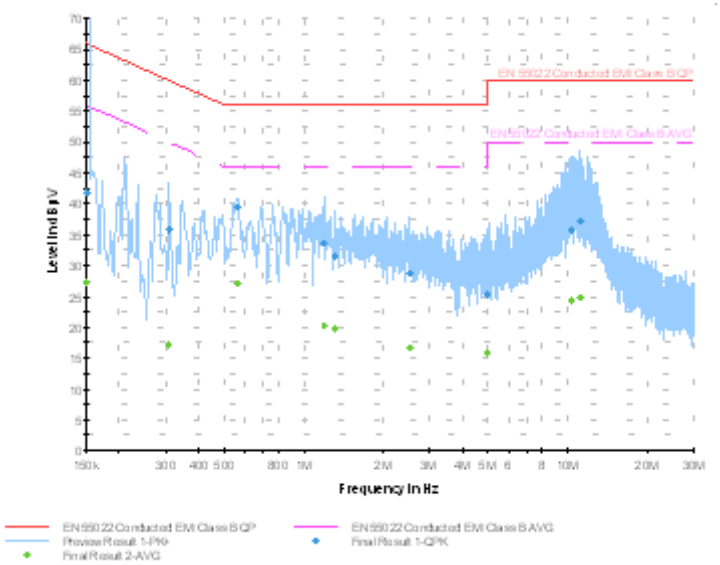


Figure 1-4: N Lines



AC Conducted Emissions Test Results cont'd

Test Configuration 3

Date of the test: March 5, 2012
The environmental conditions were: Temperature: 24.9 °C
Humidity: 36.0 %

Frequency (MHz)	Line	Reading (QP) (dBµV)	Correction Factor (dB)	Corrected Reading (QP) (dBµV)	Limit (QP) (dBµV)	Margin (QP) Limits (dB)
0.150	L1	41.50	11.20	52.71	66.00	-13.30
0.276	L1	35.46	10.33	45.78	60.90	-15.12
0.672	L1	30.04	9.84	39.88	56.00	-16.12
1.662	L1	32.04	9.81	41.85	56.00	-14.15
1.860	L1	32.59	9.82	42.41	56.00	-13.59
2.058	L1	33.17	9.83	43.00	56.00	-13.01
2.180	L1	33.05	9.83	42.88	56.00	-13.12
3.939	L1	27.85	9.90	37.75	56.00	-18.25
12.566	L1	25.71	10.05	35.75	60.00	-24.25
0.150	N	38.79	11.23	50.03	66.00	-15.97
0.281	N	37.83	10.31	48.14	60.80	-12.66
0.681	N	37.37	9.84	47.21	56.00	-8.79
1.082	N	36.83	9.81	46.64	56.00	-9.36
1.811	N	37.45	9.82	47.27	56.00	**-8.73**
2.049	N	36.92	9.83	46.75	56.00	-9.25
2.405	N	36.15	9.85	46.00	56.00	-10.00
3.687	N	30.15	9.90	40.05	56.00	-15.95

AC Conducted Emissions Test Results cont'd

Frequency (MHz)	Line	Reading (AVG) (dBµV)	Correction Factor (dB)	Corrected Reading (AVG) (dBµV)	Limit (AV) (dBµV)	Margin (AVG) Limits (dB)
0.150	N	20.97	11.23	32.20	46.00	-23.80
0.281	N	24.56	10.31	34.87	40.80	-15.93
0.681	N	21.71	9.84	31.56	36.00	-14.44
1.082	N	20.41	9.81	30.22	36.00	-15.78
1.811	N	22.78	9.82	32.60	36.00	**-13.40**
2.049	N	22.69	9.83	32.52	36.00	-13.48
2.405	N	22.19	9.85	32.04	36.00	-13.96
3.687	N	18.12	9.90	28.02	36.00	-17.98

All other emission levels had test margins of greater than 25 dB.
Measurements were done with the quasi-peak and average detector.

See figure 1-5 and figure 1-6 for the measurement plot of the L1 and N lines of AC power line conducted emissions.

AC Conducted Emissions Test Graphs

Test Configuration 3

Figure 1-5: L1 lines

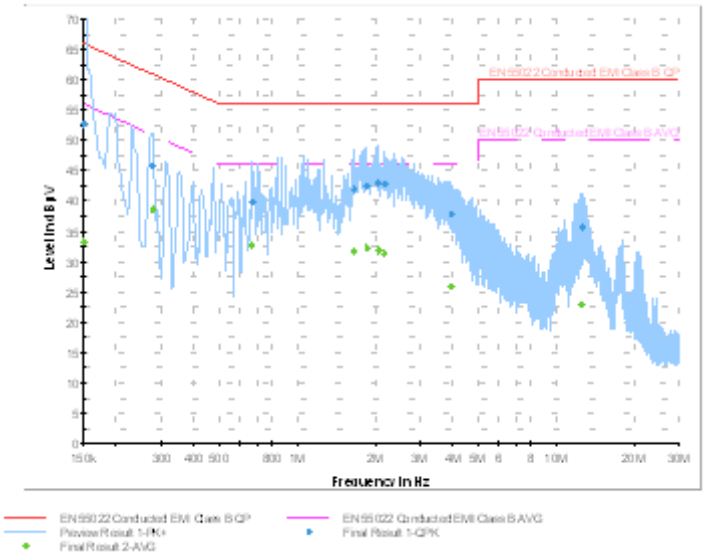
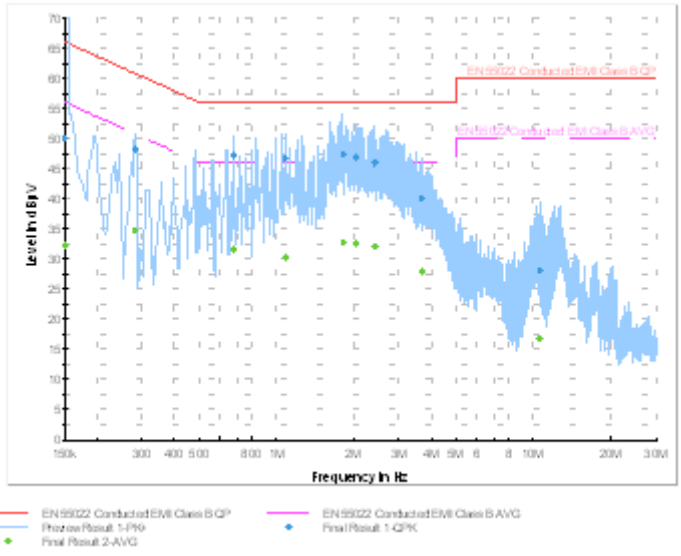


Figure 1-6: N Lines



AC Conducted Emissions Test Results cont'd

Test Configuration 4

Date of the test: March 5, 2012
The environmental conditions were: Temperature: 25.4 °C
Humidity: 39.6 %

Frequency (MHz)	Line	Reading (QP) (dBµV)	Correction Factor (dB)	Corrected Reading (QP) (dBµV)	Limit (QP) (dBµV)	Limit (AV) (dBµV)	Margin (QP) Limits (dB)
0.150	L1	31.69	11.20	42.89	66.00	56.00	-23.11
0.416	L1	26.73	9.99	36.72	57.50	47.50	-20.78
0.690	L1	29.85	9.84	39.68	56.00	46.00	-16.32
0.996	L1	29.24	9.80	39.05	56.00	46.00	-16.95
1.302	L1	27.62	9.80	37.42	56.00	46.00	-18.58
2.378	L1	24.38	9.84	34.22	56.00	46.00	-21.78
3.944	L1	22.29	9.90	32.19	56.00	46.00	-23.81
11.112	L1	31.43	9.99	41.42	60.00	50.00	-18.58
11.256	L1	31.91	9.99	41.90	60.00	50.00	-18.10
11.922	L1	31.08	10.02	41.10	60.00	50.00	-18.90
0.231	N	27.73	10.66	38.39	62.40	52.40	-24.01
0.276	N	29.28	10.34	39.63	60.90	50.90	-21.27
0.551	N	28.05	9.89	37.94	56.00	46.00	-18.06
0.839	N	26.52	9.82	36.34	56.00	46.00	-19.66
1.334	N	22.57	9.81	32.37	56.00	46.00	-23.63
10.347	N	27.36	9.98	37.34	60.00	50.00	-22.66
11.634	N	27.50	10.01	37.51	60.00	50.00	-22.49

All other emission levels had test margins greater than 25 dB.
Measurements were done with the quasi-peak and the average detector.

See figure 1-7 and figure 1-8 for the measurement plot of the L1 and N lines of AC power line conducted emissions.

AC Conducted Emissions Test Graphs

Test Configuration 4

Figure 1-7: L1 lines

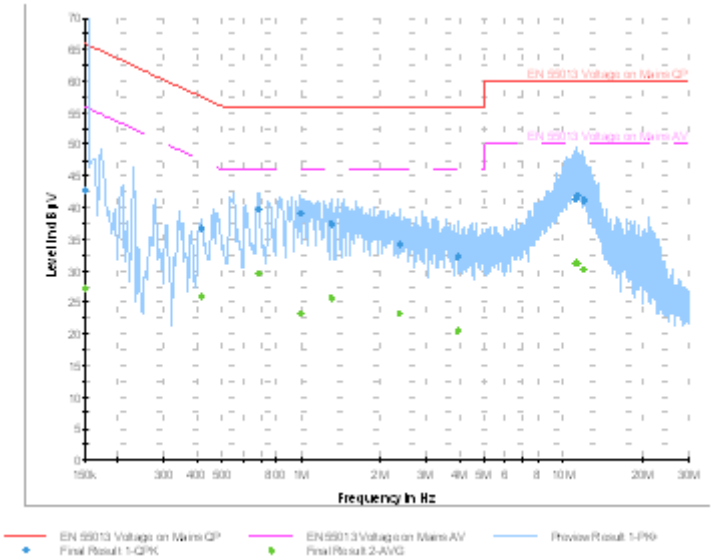
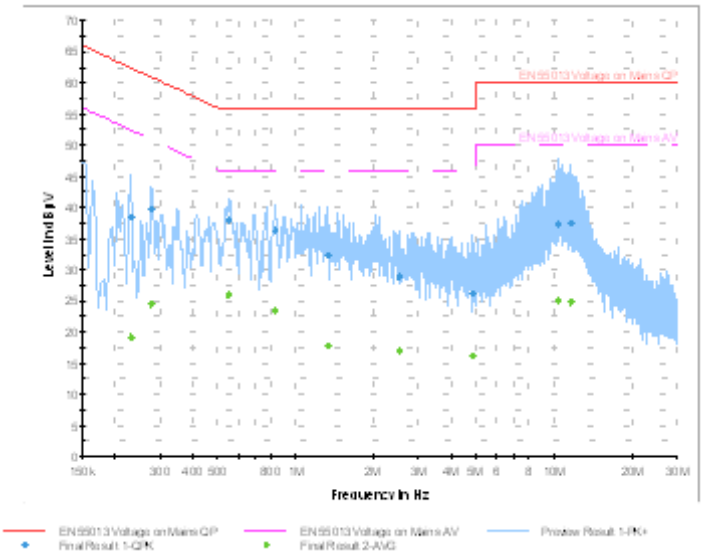


Figure 1-8: N Lines



AC Conducted Emissions Test Results cont'd

Test Configuration 5

Date of the test: March 5, 2012
The environmental conditions were: Temperature: 25.5 °C
Humidity: 37.3 %

Frequency (MHz)	Line	Reading (QP) (dBµV)	Correction Factor (dB)	Corrected Reading (QP) (dBµV)	Limit (QP) (dBµV)	Limit (AV) (dBµV)	Margin (QP) Limits (dB)
0.344	L1	28.68	10.10	38.78	59.10	49.10	-20.32
0.618	L1	28.98	9.85	38.84	56.00	46.00	-17.17
0.929	L1	27.57	9.81	37.38	56.00	46.00	-18.62
1.262	L1	28.55	9.80	38.35	56.00	46.00	-17.65
2.792	L1	29.53	9.86	39.40	56.00	46.00	-16.60
4.565	L1	28.40	9.90	38.31	56.00	46.00	-17.70
22.902	L1	25.94	10.31	36.25	60.00	50.00	-23.75
25.764	L1	30.18	10.26	40.44	60.00	50.00	-19.56
28.622	L1	28.23	10.38	38.61	60.00	50.00	-21.39
0.411	N	24.18	10.01	34.18	57.60	47.60	-23.42
0.915	N	23.03	9.81	32.84	56.00	46.00	-23.16
2.099	N	23.54	9.83	33.37	56.00	46.00	-22.63
2.922	N	27.85	9.87	37.73	56.00	46.00	-18.27
4.781	N	28.85	9.91	38.76	56.00	46.00	-17.24
28.644	N	34.23	10.40	44.63	60.00	50.00	-15.37

All other emission levels had test margins greater than 25 dB.
Measurements were done with the quasi-peak and the average detector.

See figure 1-9 and figure 1-10 for the measurement plot of the L1 and N lines of AC power line conducted emissions.

AC Conducted Emissions Test Graphs

Test Configuration 5

Figure 1-9: L1 lines

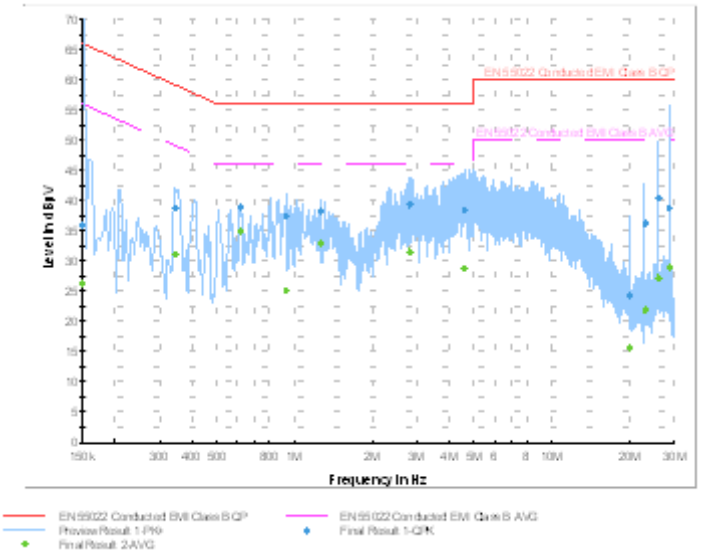
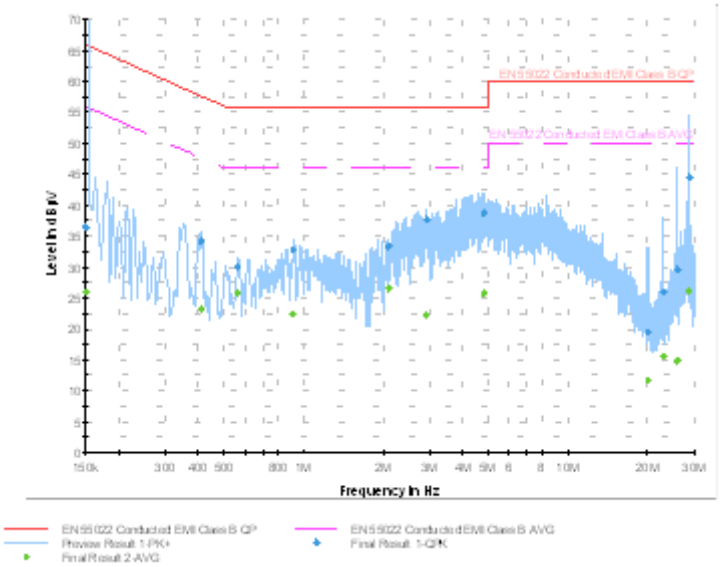


Figure 1-10: N Lines



AC Conducted Emissions Test Results cont'd

Test Configuration 6

Date of the test: March 9, 2012
The environmental conditions were: Temperature: 25.5 °C
Humidity: 37.3 %

Frequency (MHz)	Line	Reading (QP) (dBµV)	Correction Factor (dB)	Corrected Reading (QP) (dBµV)	Limit (QP) (dBµV)	Limit (AV) (dBµV)	Margin (QP) Limits (dB)
0.173	L1	29.93	11.05	40.98	64.80	54.80	-23.83

All other emission levels had test margins greater than 25 dB.
Measurements were done with the quasi-peak and the average detector.

See figure 1-11 and figure 1-12 for the measurement plot of the L1 and N lines of AC power line conducted emissions.

AC Conducted Emissions Test Graphs

Test Configuration 6

Figure 1-11: L1 lines

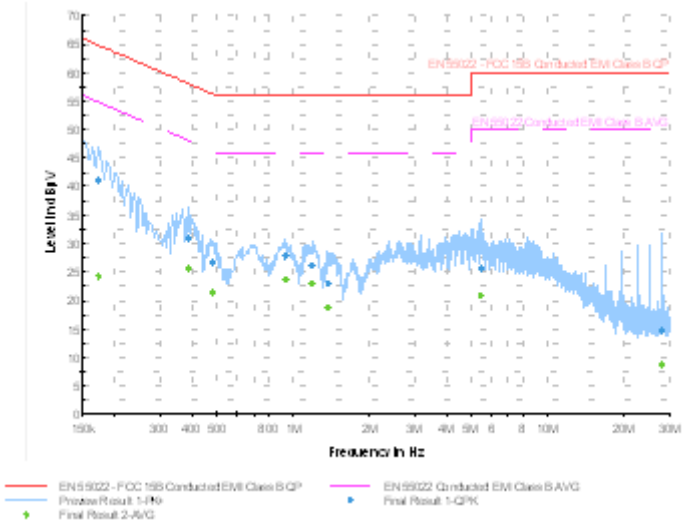
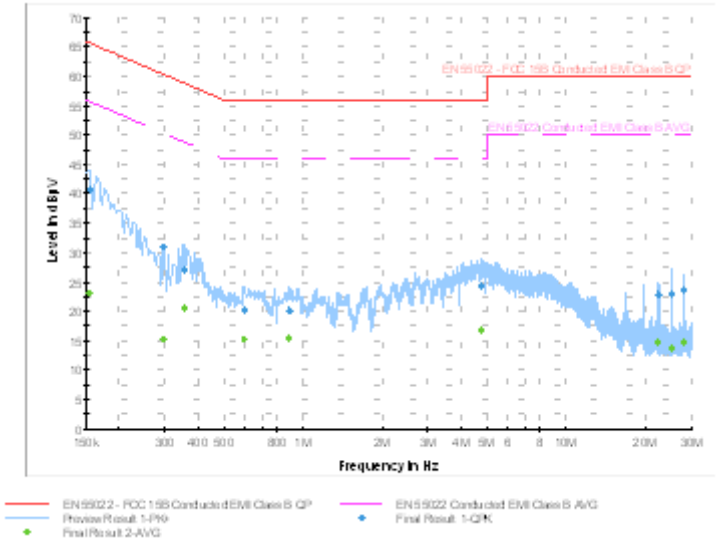


Figure 1-12: N Lines



AC Conducted Emissions Test Results cont'd

Test Configuration 7

Date of the test: March 12, 2012
The environmental conditions were: Temperature: 24.9 °C
Humidity: 38.8 %

Frequency (MHz)	Line	Reading (QP) (dBµV)	Correction Factor (dB)	Corrected Reading (QP) (dBµV)	Limit (QP) (dBµV)	Limit (AV) (dBµV)	Margin (QP) Limits (dB)
0.393	L1	26.30	10.02	36.32	58.00	48.00	-21.68
0.420	L1	32.42	9.98	42.40	57.40	47.40	-15.00
0.821	L1	24.41	9.82	34.23	56.00	46.00	-21.77
0.434	N	32.39	9.97	42.36	57.20	47.20	-14.84
0.839	N	23.59	9.82	33.41	56.00	46.00	-22.59

All other emission levels had test margins greater than 25 dB.
Measurements were done with the quasi-peak and the average detector.

See figure 1-13 and figure 1-14 for the measurement plot of the L1 and N lines of AC power line conducted emissions.

AC Conducted Emissions Test Graphs

Test Configuration 7

Figure 1-13: L1 lines

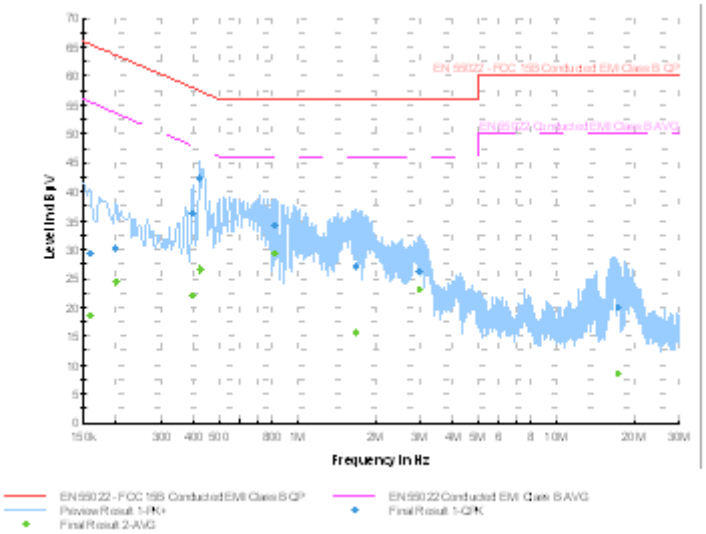
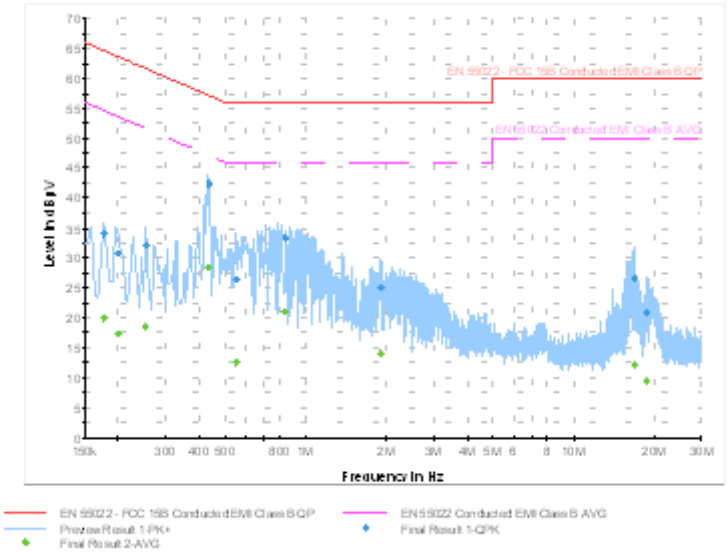


Figure 1-14: N Lines



AC Conducted Emissions Test Results cont'd

Test Configuration 8

Date of the test: March 12, 2012
The environmental conditions were: Temperature: 24.9 °C
Humidity: 38.8 %

Frequency (MHz)	Line	Reading (QP) (dBµV)	Correction Factor (dB)	Corrected Reading (QP) (dBµV)	Limit (QP) (dBµV)	Limit (AV) (dBµV)	Margin (QP) Limits (dB)
0.150	L1	31.28	11.20	42.48	66.00	56.00	-23.52
0.191	L1	29.06	10.92	39.99	64.00	54.00	-24.01
0.398	L1	26.89	10.01	36.90	57.90	47.90	-21.00
0.762	L1	27.01	9.82	36.83	56.00	46.00	-19.17
1.406	L1	31.92	9.80	41.73	56.00	46.00	-14.28
2.585	L1	28.02	9.85	37.87	56.00	46.00	-18.13
3.035	L1	26.86	9.87	36.74	56.00	46.00	-19.26
0.204	N	28.74	10.85	39.59	63.40	53.40	-23.81
0.420	N	27.13	9.99	37.12	57.40	47.40	-20.28
0.474	N	25.68	9.93	35.61	56.40	46.40	-20.79
0.695	N	23.50	9.84	33.34	56.00	46.00	-22.66
1.338	N	30.17	9.81	39.98	56.00	46.00	-16.02
1.617	N	26.44	9.82	36.26	56.00	46.00	-19.74
2.634	N	23.34	9.86	33.20	56.00	46.00	-22.80

All other emission levels had test margins greater than 25 dB.
Measurements were done with the quasi-peak and the average detector.

See figure 1-15 and figure 1-16 for the measurement plot of the L1 and N lines of AC power line conducted emissions.

AC Conducted Emissions Test Graphs

Test Configuration 8

Figure 1-15: L1 lines

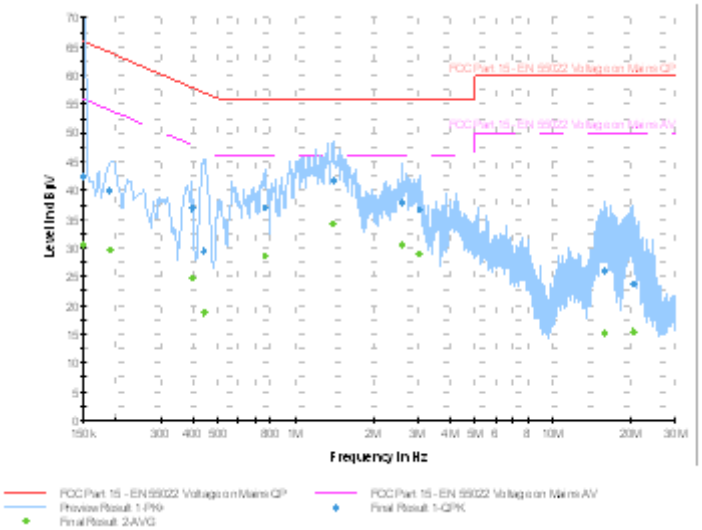
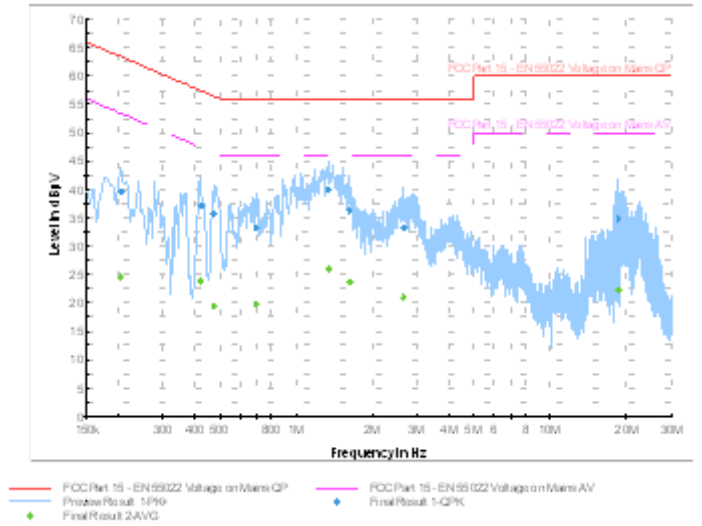


Figure 1-16: N Lines



APPENDIX 2 - RADIATED EMISSIONS TEST DATA

Radiated Emissions Test Results

The following test configurations were measured for model REV71UW.

The following tests were performed by Ven Olis.

Test Configuration 1

Date of the test: March 5, 2011
The environmental conditions were: Temperature: 28.0 °C
Humidity: 10.7 %

Frequency (MHz)	Antenna Pol. (V/H)	Antenna Height (metres)	Test Angle (Deg.)	Detector (Q.P. or Peak)	Measured Level (dBµV)	Correction Factor for preamp/antenna / cables/ filter (dB/m)	Field Strength Level (reading +corr) (dBµV/m)	Limit @ 3.0 m (dBµV/m)	Test Margin (dB)
49.000	V	1.40	240.00	Q.P.	40.33	-16.43	23.90	40.00	-16.10
124.400	H	3.28	354.00	Q.P.	44.07	-11.74	32.33	43.50	-11.17
138.300	V	1.40	276.00	Q.P.	39.89	-12.04	27.85	43.50	-15.65
210.200	V	3.99	159.00	Q.P.	27.78	-8.47	19.31	43.50	-24.19
309.300	H	1.34	354.00	Q.P.	39.29	-6.22	33.07	46.00	-12.93

All other emission levels had test margins greater than 25 dB.

Radiated Emissions Test Results cont'd

Test Configuration 2

Date of the test: March 5, 2011
The environmental conditions were: Temperature: 27.0 °C
Humidity: 10.7 %

Frequency (MHz)	Antenna Pol. (V/H)	Antenna Height (metres)	Test Angle (Deg.)	Detector (Q.P. or Peak)	Measured Level (dBµV)	Correction Factor for preamp/antenna / cables/ filter (dB/m)	Field Strength Level (reading +corr) (dBµV/m)	Limit @ 3.0 m (dBµV/m)	Test Margin (dB)
69.250	V	1.40	354.00	Q.P.	31.15	-16.12	15.03	40.00	-24.97
176.800	H	1.00	355.00	Q.P.	37.26	-10.91	26.35	43.50	-17.15
273.550	H	1.22	185.00	Q.P.	37.00	-8.91	28.09	46.00	-17.91
359.150	H	1.00	346.00	Q.P.	32.11	-4.98	27.13	46.00	-18.87

All other emission levels had test margins greater than 25 dB.

Radiated Emissions Test Results cont'd

Test Configuration 3

Date of the test: March 5, 2011
The environmental conditions were: Temperature: 26.0 °C
Humidity: 10.7 %

Frequency (MHz)	Antenna Pol. (V/H)	Antenna Height (metres)	Test Angle (Deg.)	Detector (Q.P. or Peak)	Measured Level (dBµV)	Correction Factor for preamp/antenna / cables/ filter (dB/m)	Field Strength Level (reading+corr) (dBµV/m)	Limit @ 3.0 m (dBµV/m)	Test Margin (dB)
50.800	V	3.68	293.00	Q.P.	34.99	-16.82	18.17	40.00	-21.83
69.250	V	1.90	93.00	Q.P.	43.68	-16.12	27.56	40.00	-12.44
213.300	V	1.40	184.00	Q.P.	41.43	-8.95	32.48	43.50	-11.02
219.000	V	1.54	218.00	Q.P.	39.82	-9.59	30.23	46.00	-15.77
382.250	V	1.47	155.00	Q.P.	34.06	-4.61	29.45	46.00	-16.55

All other emission levels had test margins greater than 25 dB.

Radiated Emissions Test Results cont'd

Test Configuration 4

Date of the test: March 7, 2011
The environmental conditions were: Temperature: 27.1 °C
Humidity: 15.1 %

Frequency (MHz)	Antenna Pol. (V/H)	Antenna Height (metres)	Test Angle (Deg.)	Detector (Q.P. or Peak)	Measured Level (dBµV)	Correction Factor for preamp/antenna / cables/ filter (dB/m)	Field Strength Level (reading+corr) (dBµV/m)	Limit @ 3.0 m (dBµV/m)	Test Margin (dB)
46.500	V	1.40	63.00	Q.P.	34.24	-16.18	18.06	40.00	-21.94
75.500	V	2.53	210.00	Q.P.	35.65	-15.18	20.47	40.00	-19.53
158.850	H	1.00	354.00	Q.P.	35.96	-11.85	24.11	43.50	-19.39
202.350	H	2.20	29.00	Q.P.	29.39	-7.93	21.46	43.50	-22.04
310.200	H	1.00	355.00	Q.P.	36.66	-6.16	30.50	46.00	-15.50
390.150	H	1.00	354.00	Q.P.	42.88	-4.15	38.73	46.00	-7.27
432.050	V	3.95	155.00	Q.P.	33.98	-3.09	30.89	46.00	-15.11

All other emission levels had test margins greater than 25 dB.

Radiated Emissions Test Results cont'd

Test Configuration 5

Date of the test: March 5, 2011
The environmental conditions were: Temperature: 28.0 °C
Humidity: 10.7 %

Frequency (MHz)	Antenna Pol. (V/H)	Antenna Height (metres)	Test Angle (Deg.)	Detector (Q.P. or Peak)	Measured Level (dBµV)	Correction Factor for preamp/antenna / cables/ filter (dB/m)	Field Strength Level (reading+corr) (dBµV/m)	Limit @ 3.0 m (dBµV/m)	Test Margin (dB)
38.450	V	1.40	154.00	Q.P.	30.54	-14.38	16.16	40.00	-23.84
47.100	V	1.40	11.00	Q.P.	43.23	-16.23	27.00	40.00	-13.00
88.300	V	1.40	286.00	Q.P.	47.71	-13.66	34.05	43.50	-9.45
155.400	H	2.44	354.00	Q.P.	38.24	-11.95	26.29	43.50	-17.21
210.800	H	1.22	355.00	Q.P.	44.31	-8.54	35.77	43.50	-7.73
339.750	V	3.68	323.00	Q.P.	35.13	-2.89	32.24	46.00	-13.76
398.750	H	1.00	354.00	Q.P.	36.73	-3.98	32.75	46.00	-13.25

All other emission levels had test margins greater than 25 dB.

Radiated Emissions Test Results cont'd

Test Configuration 6

Date of the test: March 13, 2011
The environmental conditions were: Temperature: 24.0 °C
Humidity: 29.4 %

Frequency (MHz)	Antenna Pol. (V/H)	Antenna Height (metres)	Test Angle (Deg.)	Detector (Q.P. or Peak)	Measured Level (dBµV)	Correction Factor for preamp/antenna / cables/ filter (dB/m)	Field Strength Level (reading+corr) (dBµV/m)	Limit @ 3.0 m (dBµV/m)	Test Margin (dB)
53.600	V	1.53	243.00	Q.P.	40.71	-16.40	24.31	40.00	-15.69
112.900	V	2.05	83.00	Q.P.	30.41	-10.44	19.97	43.50	-23.53
200.300	V	1.52	86.00	Q.P.	39.37	-6.22	33.15	43.50	-10.35
273.600	V	1.52	208.00	Q.P.	37.65	-6.85	30.80	46.00	-15.20
372.000	V	1.85	92.00	Q.P.	32.43	-2.63	29.80	46.00	-16.20

All other emission levels had test margins greater than 25 dB.

Radiated Emissions Test Results cont'd

Test Configuration 7

Date of the test: March 19, 2011
The environmental conditions were: Temperature: 26.4°C
Humidity: 35.6 %

Frequency (MHz)	Antenna Pol. (V/H)	Antenna Height (metres)	Test Angle (Deg.)	Detector (Q.P. or Peak)	Measured Level (dBµV)	Correction Factor for preamp/antenna / cables/ filter (dB/m)	Field Strength Level (reading+corr) (dBµV/m)	Limit @ 3.0 m (dBµV/m)	Test Margin (dB)
66.650	V	1.40	29.00	Q.P.	34.34	-15.52	18.82	40.00	-21.18
169.300	V	2.88	42.00	Q.P.	46.36	-10.00	36.36	43.50	**-7.14**
206.050	V	1.82	244.00	Q.P.	29.69	-6.35	23.34	43.50	-20.16
239.800	V	1.40	129.00	Q.P.	37.44	-8.45	28.99	46.00	-17.01
350.000	V	1.50	189.00	Q.P.	33.74	-0.70	33.04	46.00	-12.96

All other emission levels had test margins greater than 25 dB.