



TEST REPORT

EMC tests

Ocean Swipe 360

CRIQ File 670-53794

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A handwritten signature in blue ink, appearing to read "Patrick Fokom".

PATRICK FOKOM, P.ENG.
PROJECT MANAGER
TEST AND PRODUCT CONFORMITY FOR
EXPORTATION DIVISION

A handwritten signature in blue ink, appearing to read "Martin Thériault".

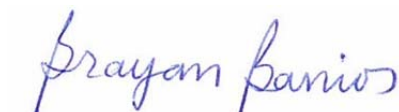
MARTIN THÉRIAULT, P.ENG.
DIRECTOR
TEST AND PRODUCT CONFORMITY FOR
EXPORTATION DIVISION

MONTREAL, JUNE 1ST, 2017

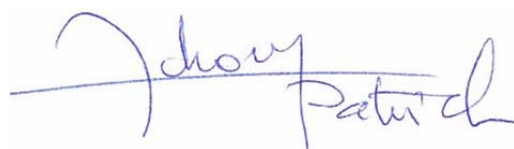
CRIQ DECLARATION

Testing took place on April 11, 2017. The sample was received at CRIQ on the same day.

Testing was completed and supervised by the undersigned; they attest to the accuracy of the results.



Performed by: Brayan Barrios



Supervised by: Patrick Fokom, P.Eng.

This report was written by: Patrick Fokom

REVISION HISTORY

Revision No.	Date	By	Description
00	June 1 st 2017	Patrick Fokom	First publication

The latest revision replaces previous revisions.

Une version française de ce rapport est également disponible.

The client cited on the cover page of this report may reproduce the document in its entirety or integral text of the report without the appendices. Any other form of reproduction by anyone is subject to prior written approval from the CRIQ.

Total number of pages: 35 including 26 pages in appendices.

The results presented in this report refer only to the products described in this report.

The equipment and instrumentation used during this test were verified and/or calibrated. The calibration certificates are retraceable to the National Research Council of Canada (NRC) and/or to the American National Institute of Standards and Technology (NIST) standards and can be provided on request. For standards identified in our scope of accreditation, the existing reports identifying measurement uncertainty or the performance of test apparatus are available upon request.

CRIQ is registered ISO 9001, certificate no. 008999, and this testing laboratory is accredited ISO 17025 by the Standards Council of Canada for specific tests as listed on www.scc.ca.

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1. INTRODUCTION

1.1. Object

To perform conducted and radiated emissions measurements on the product *Ocean Swipe 360*. The measurements are completed according to the test requirements of Part 15 of the FCC rules.

1.2. Description of equipment under test

Table 1 identifies the equipment under test (EUT). The EUT is a production sample randomly selected by the manufacturer. The configuration submitted to the tests is representative of a typical installation.

Model	Type	Manufacturer	Serial No.	CRIQ No.
Ocean Swipe 360	Aquarium cleaner	Services Diversifiés	N/D	E35724
PA-1650-86	Power supply	Lite-On	2543207602	E35725

Table 1: Description of equipment under test

1.3. Field of application

All tests are performed on a sample of the system in compliance with the standards listed in Table 2 of Section 1.4. Test methods comply with those prescribed by the latter standards.

1.4. Results

Table 2 summarizes the results of the tests described herein.

Test name Standard	Limit Test level	EUT	Results
Measurement of conducted emissions FCC Part 15 : 2015, Subpart B CISPR 22: 2008	Class B	E35724 E35725	Pass
Measurement of radiated emissions FCC Part 15 : 2015, Subpart B CISPR 22: 2008	Class B	E35724 E35725	Pass

Table 2: Summary of the results

1.5. List of test and measurement equipment

The test and measurement equipment used for the purpose of these tests is described in Table 3.

Equipment	Manufacturer; Model	Serial No.	Calibration	
			Interval (months)	Expiration (y-m-d)
Emissions software	NEXIO; BAT-EMC v3.10.0.8 ⁽¹⁰⁸³⁾	N/A	N/A	
20 Hz to 26 GHz receiver	Rohde & Schwarz; ESU26 ⁽¹¹¹⁶⁾	100545	24	2018-07-13
LISN	Rohde & Schwarz; ENV 216 ⁽⁶⁹⁰⁾	100084	24	2018-07-12
Bilog antenna	ETS-Lindgren; 3143B ⁽¹¹⁴⁵⁾	166047	24	2017-11-23

Table 3: List of test and measurement equipment

1.6. Test configuration

During conducted emission tests, the system is in *Charging* mode, with the *Ocean Swipe 360* equipment connected to the power supply.

When performing radiated emissions measurements, the system is in *Continuous* mode; meaning that the *Ocean Swipe 360* equipment was in motion, away from the power supply. Measurements were also taken in *Charging* mode.

The configuration of the system under test is featured on photographs presented in appendix.

1.7. Technical comments applicable to all tests

No particular component or method was used to improve the electromagnetic performance of the EUT during testing.

Radiated emissions measurements are made at a distance of 3 meters. No other change or deviation was made to test specifications.

2. CONDUCTED AND RADIATED EMISSIONS

2.1. Measurement of conducted emissions

Test Standard	Measurement of conducted emissions FCC, Part 15, Subpart B: 2015 CISPR 22: 2008
Specifications	Limit: Class B
Date	2017-04-11
Temperature / Humidity	Ambient
Atmospheric pressure	Ambient
Operator	Brayan Barrios
EUT	E35724 E35725
Supply	120 V / 60 Hz 230 V / 50 Hz

2.1.1. Test results

Frequency [MHz]	Average limit [dB μ V]	Quasi-peak Limit [dB μ V]	Tested line	Result
0.150 – 0.50	56 to 46	66 to 56	230 V / 50 Hz - LINE	Compliant
			230 V / 50 Hz - NEUTRAL	Compliant
0.50 – 5	46	56	230 V / 50 Hz - LINE	Compliant
			230 V / 50 Hz - NEUTRAL	Compliant
5 – 30	50	60	230 V / 50 Hz - LINE	Compliant
			230 V / 50 Hz - NEUTRAL	Compliant

Table 4: CISPR 22, Class B results

Frequency [MHz]	Average limit [dB μ V]	Quasi-peak Limit [dB μ V]	Tested line	Result
0.150 – 0.50	56 to 46	66 to 56	120 V / 60 Hz - LINE	Compliant
			120 V / 60 Hz - NEUTRAL	Compliant
0.50 – 5	46	56	120 V / 60 Hz - LINE	Compliant
			120 V / 60 Hz - NEUTRAL	Compliant
5 – 30	50	60	120 V / 60 Hz - LINE	Compliant
			120 V / 60 Hz - NEUTRAL	Compliant

Table 5: FCC Part 15, Subpart B, Class B results

No significant emission was noted as the level recorded in peak mode was at least 10 dB below the quasi-peak limit.

2.1.2. Test data

Please refer to APPENDIX A for test setup photographs and charts of the results.

2.1.3. Test method

A preliminary test is performed to determine the effect of the position of the interface cables and find the configuration causing the highest emission level. In the case of equipment with multiple modes of operation, preliminary tests are performed to find the worst case.

The EUT, powered up and functional, is set up in accordance with the test standard specifications. Conducted emissions are measured using a Rohde & Schwarz ESU receiver, with its bandwidth set to 9 kHz. Peak- and average-value detectors are used in the frequency range from 0.15 MHz to 30 MHz.

If, during the test, there is a frequency greater than or within 10 dB of the quasi-peak limit, the level is recorded and measured again with a quasi-peak detector.

If, during the test, there is a frequency greater than or within 10 dB of the average limit, the level is recorded and measured again with an average-value detector.

The final results take into account the correction factors for different components of the measurement chain. An example of final value calculation is presented in Table 6.

value measured at the receiver (dB μ V)
+ LISN attenuation (dB)
+ cable loss (including pulse limiter) (dB)
= Final value (dBμV)

Table 6: Final value calculation – conducted emissions

2.2. Measurement of radiated emissions

Test Standard	Measurement of radiated emissions FCC Part 15 Subpart B: 2015 CISPR 22: 2008
Specifications	Limit: Class B Measuring distance: 3 meters Scan from 30 MHz to 1 GHz
Date	2017-04-11
Temperature / Humidity	Ambient
Atmospheric pressure	Ambient
Operator	Brayan Barrios
EUT	E35724 E35725
Supply	230 V / 50 Hz

2.2.1. Test results

Frequency [MHz]	Quasi-peak Limit [dB μ V/m]	Result
30 – 230	40.5	Compliant
230 – 1000	47.5	Compliant

Table 7: CISPR 22, Class B results
(limits extrapolated to 3 m)

Frequency [MHz]	Quasi-peak Limit [dB μ V/m]	Result
30 – 88	40.0	Compliant
88 – 216	43.5	Compliant
216 – 960	46.0	Compliant
Above 960	54.0	Compliant

Table 8: FCC Part 15, Subpart B, Class B results

In *Continuous* mode, no significant emission was noted as the level recorded in peak mode was at least 10 dB below the quasi-peak limit.

The emission level recorded in *Charging* mode with the smallest margin in relation to the limit is shown in Table 9.

Frequency [MHz]	Level [dB μ V/m]	FCC Class A margin [dB]
113.85	35.57	4.93

Table 9: Smallest margin for radiated emissions

2.2.2. Test data

Please refer to APPENDIX A for test setup photographs and charts of the results.

2.2.3. Test method

A preliminary test is performed to determine the effect of the position of the interface cables and find the configuration causing the highest emission level. In the case of equipment with multiple modes of operation, preliminary tests are performed to find the worst case.

The EUT, powered up and functional, is set up in the CRIQ anechoic room in accordance with the test standard specifications while the support equipment is set up in an adjacent shielded room, offering electromagnetic isolation. Measurement of radiated emissions is performed using a Rohde & Schwarz ESU receiver.

For the frequency range from 30 MHz to 1 GHz, a preview is performed using a peak detector. Resolution bandwidth is set to 120 kHz. All emissions that are greater than the limit or within 10 dB of the specified limit are recorded. A list of these frequencies and their respective emission level is compiled. Maximum level for each value is measured with a CISPR quasi-peak detector.

The final results take into account the correction factors for different components of the measurement chain. An example of final value calculation is presented in Table 10.

value measured at the receiver (dB μ V)
+ antenna factor (dB)
+ cable loss (dB)
- preamp gain (dB)
= Final value (dBμV/m)

Table 10: Final value calculation – radiated emissions

APPENDIX A

CONDUCTED AND RADIATED EMISSIONS

CONDUCTED EMISSIONS



CONDUCTED EMISSIONS
page 1 / 3

Project : 53794

Client : Services Diversifiés Inc.

Project manager : P. Fokom

EQUIPMENT UNDER TEST (EUT) - DESCRIPTION

Equipment : Ocean Swipe 360
Manufacturer : Services Diversifiés Inc.
Serial Number :
CRIQ number : E35724
Notes :

CONDUCTED EMISSIONS INFORMATIONS

Test location : Annex Chamber
Test date : 2017-04-11 13:15:48
Operator(s) : Brayan Barrios
Test Standard : CISPR22 Cl.B
Power : 230V/50Hz(E35725)
Line tested : **L**
Operating mode : Charging
Comments :

MEASUREMENT PARAMETERS

Test equipment used

CABLE : BF - 9 kHz to 200 MHz
ESH2-Z5 Mono
RECEIVER : ESU26

Frequency band : 150kHz-30MHz
Bandwidth : 9kHz

TEST NUMBER : Q-C-53794-04



CONDUCTED EMISSIONS

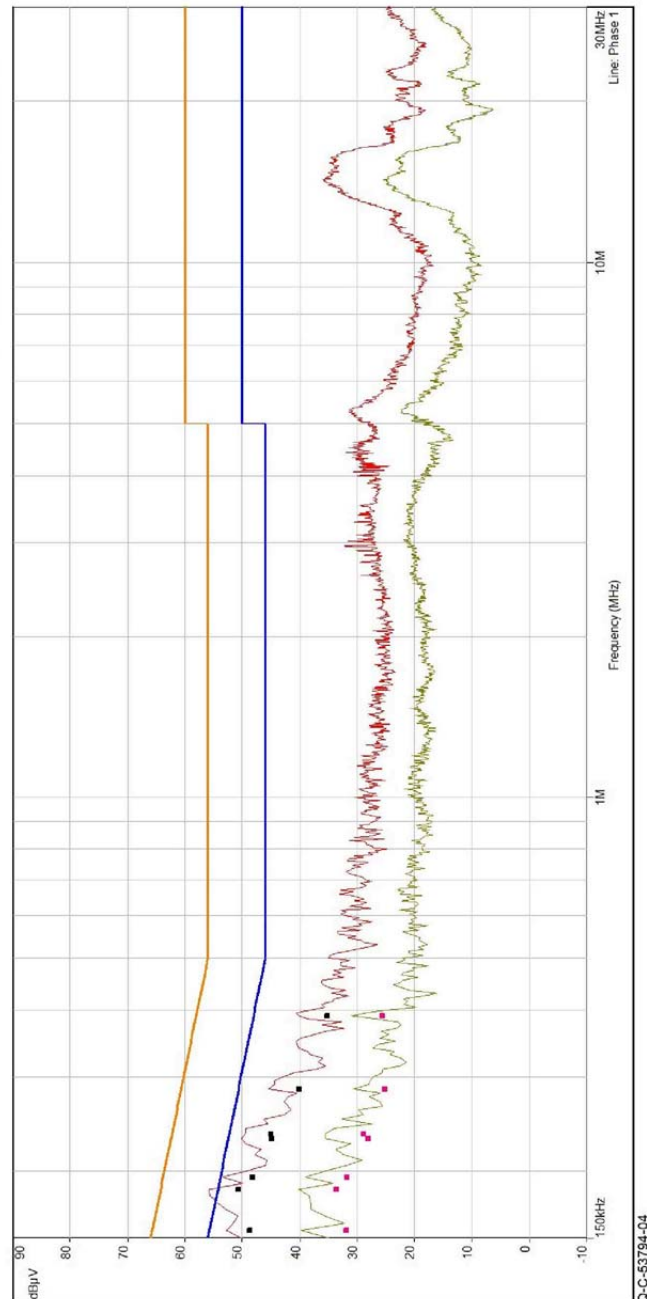
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Project : 53794

Client : Services Diversifiés Inc.

Project manager : P. Fokom

- CISPR 22 - EN 55022 (LISN) - Class B - Average/
- CISPR 22 - EN 55022 (LISN) - Class B - QPeak/
- Meas. Peak (Phase 1)
- Meas. CISPR AVG (Phase 1)
- QPeak Level (Final Results - QPeak) (Phase 1)
- Avg Level (Final Results - Avg) (Phase 1)





CONDUCTED EMISSIONS
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Project : 53794

Client : Services Diversifiés Inc.

Project manager : P. Fokom

TEST NUMBER - Q-C-53794-04

Power : 230V/50Hz(E35725) Line tested : L

Operating mode : Charging

Comments :

Final Results - Avg (7)

Frequency (MHz)	Avg Level (dBμV)	Avg Limit (dBμV)	Margin (dB)
0.155	31.96	55.73	23.77
0.185	33.69	54.26	20.57
0.195	31.82	53.82	22
0.23	28.1	52.45	24.35
0.235	28.95	52.27	23.33
0.285	25.28	50.67	25.39
0.39	25.65	48.06	22.41

Final Results - QPeak (7)

Frequency (MHz)	QPeak Level (dBμV)	QPeak Limit (dBμV)	Margin (dB)
0.155	48.76	65.73	16.97
0.185	50.72	64.26	13.54
0.195	48.24	63.82	15.58
0.23	44.99	62.45	17.46
0.235	45.02	62.27	17.25
0.285	40.22	60.67	20.45
0.39	35.27	58.06	22.8



CONDUCTED EMISSIONS
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Project : 53794

Client : Services Diversifiés Inc.

Project manager : P. Fokom

EQUIPMENT UNDER TEST (EUT) - DESCRIPTION

Equipment : Ocean Swipe 360
Manufacturer : Services Diversifiés Inc.
Serial Number :
CRIQ number : E35724
Notes :

CONDUCTED EMISSIONS INFORMATIONS

Test location : Annex Chamber
Test date : 2017-04-11 13:18:14
Operator(s) : Brayan Barrios
Test Standard : CISPR22 Cl.B
Power : 230V/50Hz(E35725)
Line tested : **N**
Operating mode : Charging
Comments :

MEASUREMENT PARAMETERS

Test equipment used

CABLE : BF - 9 kHz to 200 MHz
ESH2-Z5 Mono
RECEIVER : ESU26

Frequency band : 150kHz-30MHz
Bandwidth : 9kHz

TEST NUMBER : Q-C-53794-05



CONDUCTED EMISSIONS

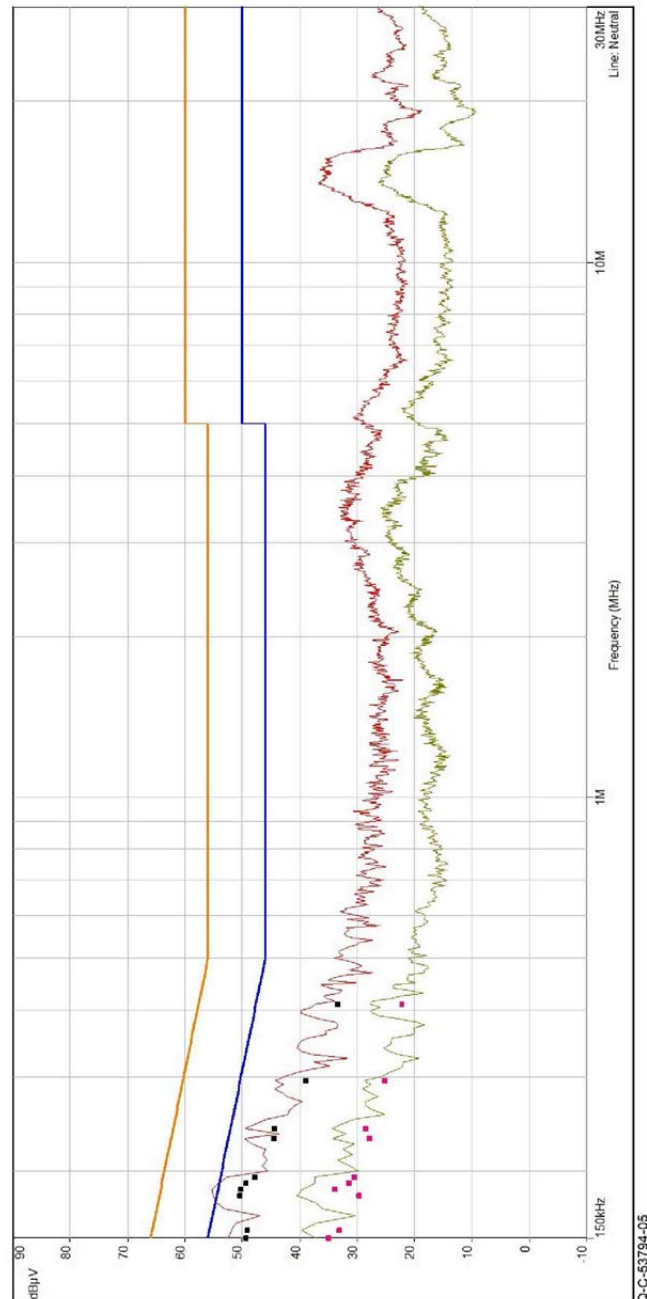
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Project : 53794

Client : Services Diversifiés Inc.

Project manager : P. Fokom

- CISPR 22 - EN 55022 (LISN) - Class B - Average/
- CISPR 22 - EN 55022 (LISN) - Class B - QPeak/
- Meas. Peak (Neutral)
- Meas. CISPR AVG (Neutral)
- QPeak Level (Final Results - QPeak) (Neutral)
- Avg Level (Final Results - Avg) (Neutral)





CONDUCTED EMISSIONS
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Project : 53794

Client : Services Diversifiés Inc.

Project manager : P. Fokom

TEST NUMBER - Q-C-53794-05

Power : 230V/50Hz(E35725) Line tested : N

Operating mode : Charging

Comments :

Final Results - Avg (10)			
Frequency (MHz)	Avg Level (dBμV)	Avg Limit (dBμV)	Margin (dB)
0.15	34.91	56	21.09
0.155	33.11	55.73	22.62
0.18	29.79	54.49	24.7
0.185	33.87	54.26	20.39
0.19	31.43	54.04	22.61
0.195	30.45	53.82	23.37
0.23	27.89	52.45	24.56
0.24	28.59	52.1	23.51
0.295	25.24	50.38	25.14
0.41	22.22	47.65	25.42

Final Results - QPeak (10)			
Frequency (MHz)	QPeak Level (dBμV)	QPeak Limit (dBμV)	Margin (dB)
0.15	49.41	66	16.59
0.155	49.13	65.73	16.6
0.18	50.47	64.49	14.02
0.185	50.33	64.26	13.92
0.19	49.41	64.04	14.62
0.195	47.77	63.82	16.05
0.23	44.59	62.45	17.86
0.24	44.46	62.1	17.63
0.295	38.97	60.38	21.41
0.41	33.42	57.65	24.22



CONDUCTED EMISSIONS
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Project : 53794

Client : Services Diversifiés Inc.

Project manager : P. Fokom

EQUIPMENT UNDER TEST (EUT) - DESCRIPTION

Equipment : Ocean Swipe 360
Manufacturer : Services Diversifiés Inc.
Serial Number :
CRIQ number : E35724
Notes :

CONDUCTED EMISSIONS INFORMATIONS

Test location : Annex Chamber
Test date : 2017-04-11 13:28:47
Operator(s) : Brayan Barrios
Test Standard : FCC Cl.B
Power : 120V/60Hz(E35725)
Line tested : L
Operating mode : Charging
Comments :

MEASUREMENT PARAMETERS

Test equipment used

CABLE : BF - 9 kHz to 200 MHz
ESH2-Z5 Mono
RECEIVER : ESU26

Frequency band : 150kHz-30MHz
Bandwidth : 9kHz

TEST NUMBER : Q-C-53794-06



CONDUCTED EMISSIONS

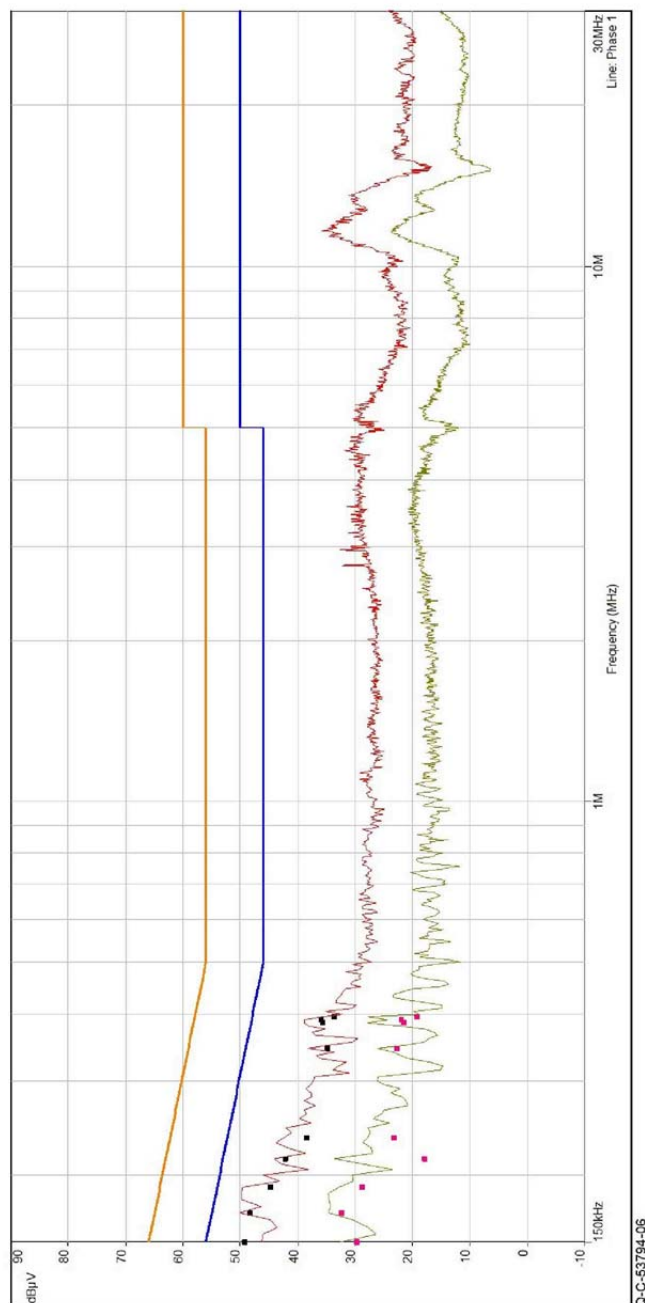
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Project : 53794

Client : Services Diversifiés Inc.

Project manager : P. Fokom

- CISPR 22 - EN 55022 (LISN) - Class B - Average/
- CISPR 22 - EN 55022 (LISN) - Class B - QPeak/
- Meas. Peak (Phase 1)
- Meas. CISPR AVG (Phase 1)
- QPeak Level (Final Results - QPeak) (Phase 1)
- Avg Level (Final Results - Avg) (Phase 1)





CONDUCTED EMISSIONS
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Project : 53794

Client : Services Diversifiés Inc.

Project manager : P. Fokom

TEST NUMBER - Q-C-53794-06

Operating mode : Charging

Power : 120V/60Hz(E35725) Line tested : L

Comments :

Final Results - Avg (9)			
Frequency (MHz)	Avg Level (dBμV)	Avg Limit (dBμV)	Margin (dB)
0.15	29.7	56	26.3
0.17	32.33	54.96	22.63
0.19	28.78	54.04	25.25
0.215	17.96	53.01	35.05
0.235	23.25	52.27	29.02
0.345	22.8	49.08	26.29
0.385	21.42	48.17	26.75
0.39	21.93	48.06	26.13
0.395	19.22	47.96	28.73

Final Results - QPeak (9)			
Frequency (MHz)	QPeak Level (dBμV)	QPeak Limit (dBμV)	Margin (dB)
0.15	49.29	66	16.71
0.17	48.37	64.96	16.59
0.19	44.77	64.04	19.27
0.215	42.23	63.01	20.78
0.235	38.54	62.27	23.73
0.345	34.81	59.08	24.27
0.385	35.62	58.17	22.55
0.39	35.89	58.06	22.18
0.395	33.63	57.96	24.33



CONDUCTED EMISSIONS
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Project : 53794

Client : Services Diversifiés Inc.

Project manager : P. Fokom

EQUIPMENT UNDER TEST (EUT) - DESCRIPTION

Equipment : Ocean Swipe 360
Manufacturer : Services Diversifiés Inc.
Serial Number :
CRIQ number : E35724
Notes :

CONDUCTED EMISSIONS INFORMATIONS

Test location : Annex Chamber
Test date : 2017-04-11 13:33:39
Operator(s) : Brayan Barrios
Test Standard : FCC Cl.B
Power : 120V/60Hz(E35725)
Line tested : **N**
Operating mode : Charging
Comments :

MEASUREMENT PARAMETERS

Test equipment used

CABLE : BF - 9 kHz to 200 MHz
ESH2-Z5 Mono
RECEIVER : ESU26

Frequency band : 150kHz-30MHz
Bandwidth : 9kHz

TEST NUMBER : Q-C-53794-07



CONDUCTED EMISSIONS

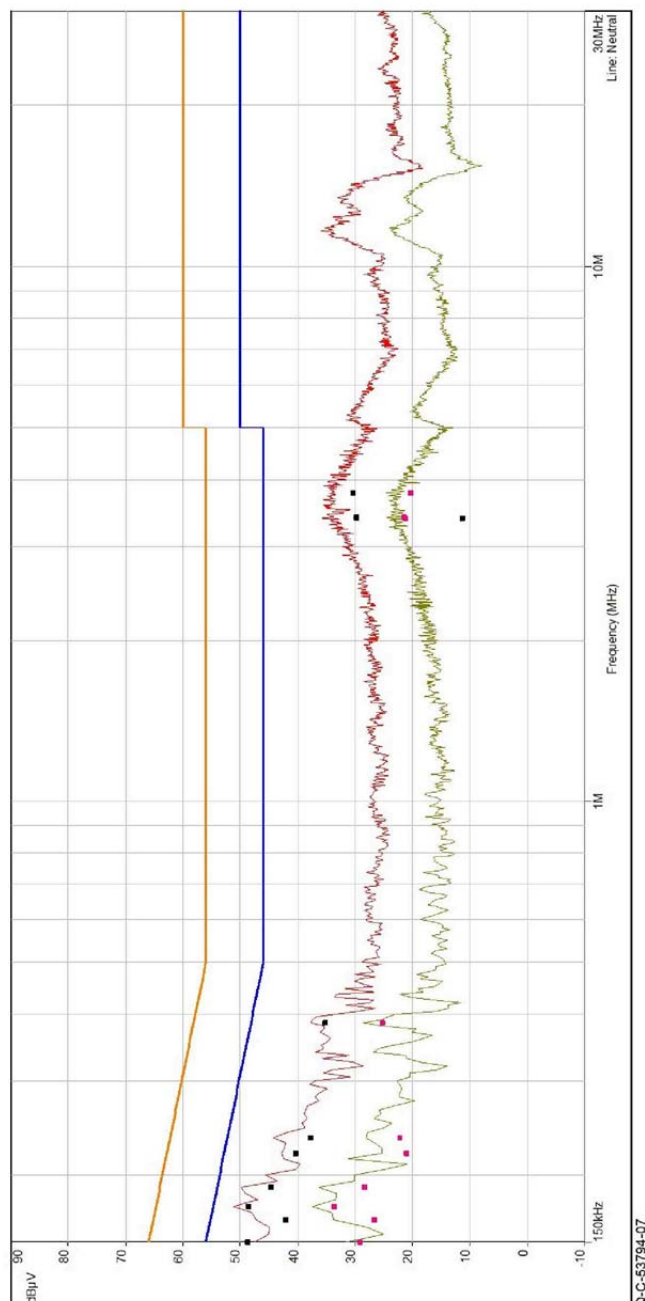
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Project : 53794

Client : Services Diversifiés Inc.

Project manager : P. Fokom

- CISPR 22 - EN 55022 (USN) - Class B - Average/
- CISPR 22 - EN 55022 (USN) - Class B - QPeak/
- Meas. Peak (Neutral)
- Meas. CISPR AVG (Neutral)
- QPeak Level (Final Results - QPeak) (Neutral)
- Avg Level (Final Results - Avg) (Neutral)





CONDUCTED EMISSIONS
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Project : 53794

Client : Services Diversifiés Inc.

Project manager : P. Fokom

TEST NUMBER - Q-C-53794-07

Power : 120V/60Hz(E35725) Line tested : N

Operating mode : Charging

Comments :

Final Results - Avg (10)				
Frequency (MHz)	Avg Level (dBμV)	Avg Limit (dBμV)	Margin (dB)	
0.15	29.22	56	26.78	
0.165	26.74	55.21	28.47	
0.175	33.7	54.72	21.02	
0.19	28.34	54.04	25.69	
0.22	21.1	52.82	31.72	
0.235	22.21	52.27	30.06	
0.385	25.24	48.17	22.93	
3.385	21.25	46	24.75	
3.395	21.44	46	24.56	
3.785	20.27	46	25.73	

Final Results - QPeak (10)				
Frequency (MHz)	QPeak Level (dBμV)	QPeak Limit (dBμV)	Margin (dB)	
0.15	48.73	66	17.27	
0.165	42.13	65.21	23.08	
0.175	48.63	64.72	16.09	
0.19	44.7	64.04	19.33	
0.22	40.36	62.82	22.46	
0.235	37.85	62.27	24.42	
0.385	35.2	58.17	22.98	
3.385	11.33	56	44.67	
3.395	29.8	56	26.2	
3.785	30.42	56	25.58	



Measurement of conducted emissions: Test setup

CRIQ is ISO 9001, certificate no 008999, and this testing laboratory is accredited ISO 17025 by the Standards Council of Canada for specific tests as listed on www.scc.ca

RADIATED EMISSIONS



RADIATED EMISSIONS
page 1 / 3

Project : 53794

Client : Services Diversifiés Inc.

Project manager : P. Fokom

EQUIPMENT UNDER TEST (EUT) - DESCRIPTION

Equipment: Ocean Swipe 360
Manufacturer: Services Diversifiés Inc.
Serial Number:
CRIQ number: E35724
Notes:

RADIATED EMISSIONS MEASUREMENT - INFORMATIONS

Test location: Anechoic chamber
Test date: 2017-04-11 10:48:06
Operator(s): Brayan Barrios
Test Standard: CISPR22 Cl.B
Power: 230V/50Hz
Operating mode: Charging
Comments:

MEASUREMENT PARAMETERS

Test equipment used

ANTENNA : ETS-LINDGREN 3143B - S/N:001166047
CABLE : MF - 9 kHz to 1.2 GHz
CONTROLLER : 1 GHz MAST
CONTROLLER : TURN TABLE
RECEIVER : ESU26

Frequency band	Bandwidth
30MHz- 500MHz	120kHz
500MHz- 1GHz	120kHz

TEST NUMBER : Q-R-53794_01



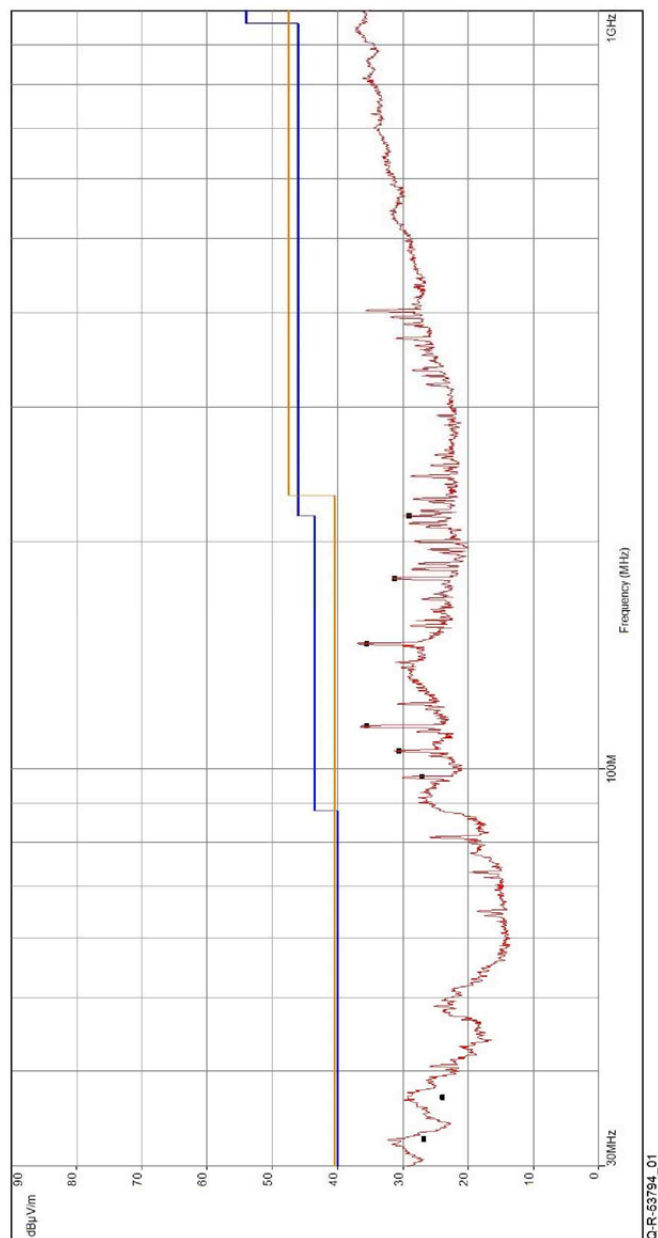
RADIATED EMISSIONS
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Project manager : P.
Fokom

Client : Services Diversifiées Inc.

Project : 53794

CISPR 22 - EN 55022 (30 to 1000 MHz) - Class B - QPeak/3.0m/
 FCC (30 to 1000 MHz) - Class B - QPeak/3.0m/
 Meas. Peak
 QPeak Level (Final Results - QPeak)





RADIATED EMISSIONS
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Project : 53794

Client : Services Diversifiés Inc.

Project manager : P. Fokom

TEST NUMBER : Q-R-53794_01

Power : **230V/50Hz**
Comments :

Operating mode : Charging

Final Results - QPeak (8)							
Frequency (MHz)	QPeak Level (dBµV/m)	QPeak Limit (dBµV/m)	Margin (dB)	Height (m)	Azimuth (deg.)	Polarization	
32.55	26.81	40.5	13.69	1	116	Vertical	
36.96	23.97	40.5	16.53	1	24	Vertical	
97.71	27.08	40.5	13.42	1.33	40	Vertical	
105.78	30.6	40.5	9.9	1	61	Vertical	
113.85	35.57	40.5	4.93	1.09	90	Vertical	
146.25	35.49	40.5	5.01	1.01	70	Vertical	
178.77	31.33	40.5	9.17	2.54	122	Vertical	
215.97	29.14	40.5	11.36	2.2	282	Vertical	



RADIATED EMISSIONS
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Project : 53794

Client : Services Diversifiés Inc.

Project manager : P. Fokom

EQUIPMENT UNDER TEST (EUT) - DESCRIPTION

Equipment: Ocean Swipe 360
Manufacturer: Services Diversifiés Inc.
Serial Number:
CRIQ number: E35724
Notes:

RADIATED EMISSIONS MEASUREMENT - INFORMATIONS

Test location: Anechoic chamber
Test date: 2017-04-11 11:58:32
Operator(s): Brayan Barrios
Test Standard: CISPR22 Cl.B
Power: 230V/50Hz
Operating mode: Continuous
Comments:

MEASUREMENT PARAMETERS

Test equipment used

ANTENNA : ETS-LINDGREN 3143B - S/N:001166047
CABLE : MF - 9 kHz to 1.2 GHz
CONTROLLER : 1 GHz MAST
CONTROLLER : TURN TABLE
RECEIVER : ESU26

Frequency band Bandwidth
30MHz- 500MHz 120kHz

TEST NUMBER : Q-R-53794_02



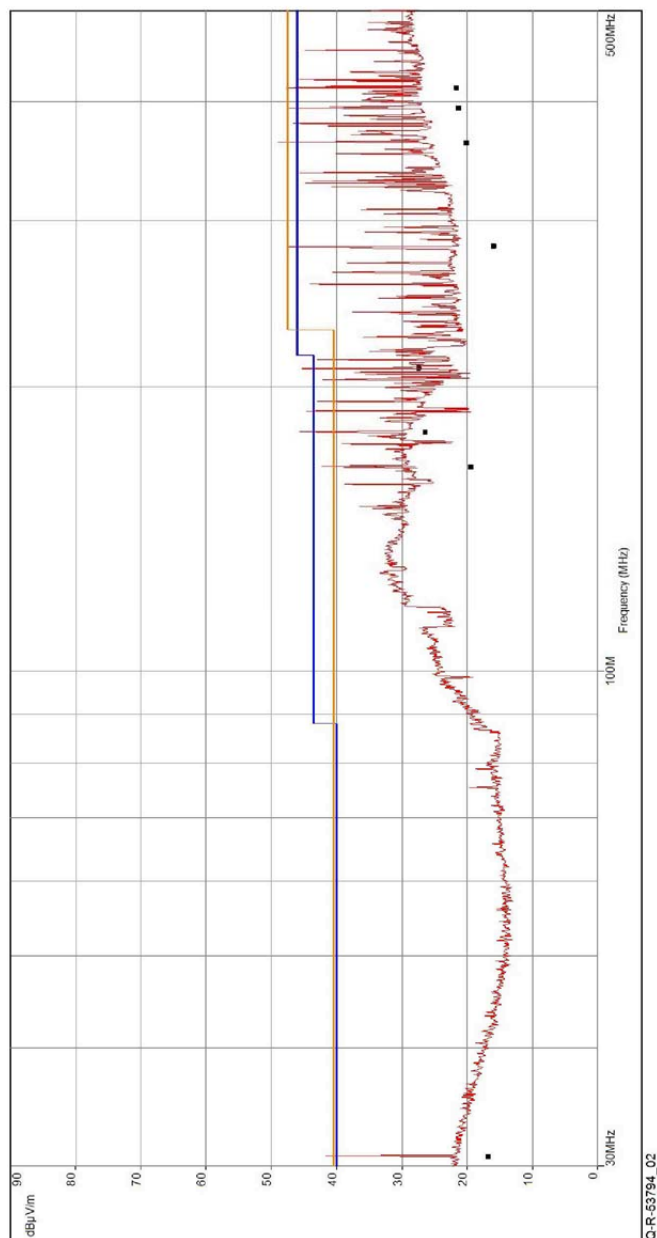
RADIATED EMISSIONS
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Project : 53794

Client : Services Diversifiés Inc.

Project manager : P.
Fokom

CISPR 22 - EN 55022 (30 to 1000 MHz) - Class B - QPeak/3.0m/
 FCC (30 to 1000 MHz) - Class B - QPeak/3.0m/
 Meas. Peak
 QPeak Level (Final Results - QPeak)





RADIATED EMISSIONS
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Project : 53794

Client : Services Diversifiés Inc.

Project manager : P. Fokom

TEST NUMBER : Q-R-53794_02

Power : **230V/50Hz**
Comments :

Operating mode : Continuous

Final Results - QPeak (8)

Frequency (MHz)	QPeak Level (dB μ V/m)	QPeak Limit (dB μ V/m)	Margin (dB)	Height (m)	Azimuth (deg.)	Polarization
30.69	16.8	40.5	23.7	2.94	143	Vertical
164.79	19.43	40.5	21.07	2.4	67	Vertical
179.1	26.47	40.5	14.03	2.28	182	Vertical
209.61	27.47	40.5	13.03	2.19	315	Vertical
281.67	15.97	47.5	31.53	3.98	17	Horizontal
362.46	20.17	47.5	27.33	1.2	60	Horizontal
393.87	21.29	47.5	26.21	2.58	340	Horizontal
414.15	21.63	47.5	25.87	1.09	72	Horizontal



RADIATED EMISSIONS
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Project : 53794

Client : Services Diversifiés Inc.

Project manager : P. Fokom

EQUIPMENT UNDER TEST (EUT) - DESCRIPTION

Equipment: Ocean Swipe 360
Manufacturer: Services Diversifiés Inc.
Serial Number:
CRIQ number: E35724
Notes:

RADIATED EMISSIONS MEASUREMENT - INFORMATIONS

Test location: Anechoic chamber
Test date: 2017-04-11 13:43:49
Operator(s): Brayan Barrios
Test Standard: CISPR22 Cl.B
Power: 230V/50Hz
Operating mode: Continuous
Comments:

MEASUREMENT PARAMETERS

Test equipment used

ANTENNA : ETS-LINDGREN 3143B - S/N:001166047
CABLE : MF - 9 kHz to 1.2 GHz
CONTROLLER : 1 GHz MAST
CONTROLLER : TURN TABLE
RECEIVER : ESU26

Frequency band 500MHz- 1GHz
Bandwidth 120kHz

TEST NUMBER : Q-R-53794_03



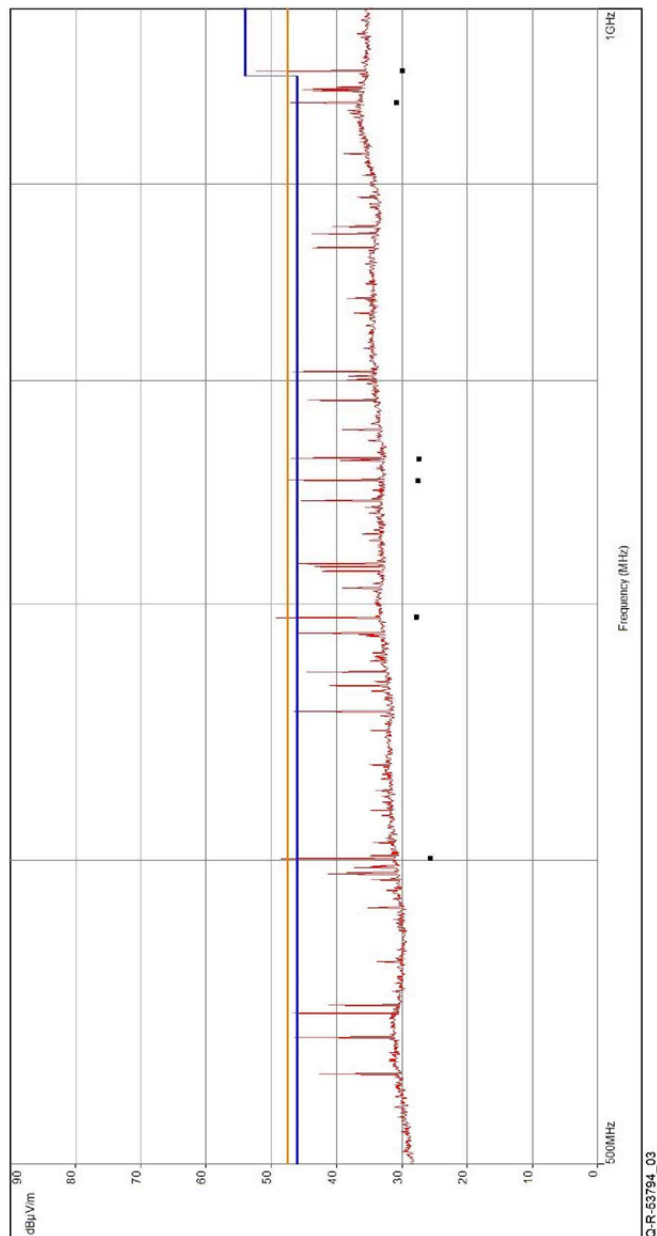
RADIATED EMISSIONS
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Project : 53794

Client : Services Diversifiés Inc.

Project manager : P.
Fokom

CISPR 22 - EN 55022 (30 to 1000 MHz) - Class B - QPeak/3.0m/
 FCC (30 to 1000 MHz) - Class B - QPeak/3.0m/
 Meas. Peak
 QPeak Level (Final Results - QPeak)





RADIATED EMISSIONS
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Project : 53794

Client : Services Diversifiés Inc.

Project manager : P. Fokom

TEST NUMBER : Q-R-53794_03

Power : **230V/50Hz**
Comments :

Operating mode : Continuous

Final Results - QPeak (6)

Frequency (MHz)	QPeak Level (dBμV/m)	QPeak Limit (dBμV/m)	Margin (dB)	Height (m)	Azimuth (deg.)	Polarization
600.68	25.58	47.5	21.92	2.92	128	Vertical
694.07	27.8	47.5	19.7	2.09	238	Vertical
753.44	27.51	47.5	19.98	3	229	Horizontal
763.43	27.51	47.5	19.99	2	152	Vertical
944.96	30.86	47.5	16.64	2.85	122	Horizontal
962.96	29.95	47.5	17.55	1.42	315	Horizontal



Measurement of radiated emissions: Test setup

CRIQ is ISO 9001, certificate no 008999, and this testing laboratory is accredited ISO 17025 by the Standards Council of Canada for specific tests as listed on www.scc.ca

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