

Global EMC Labs
EMC / EMI Test Report

As per

FCC Part 15.249, Subpart C: 2012

RSS 210:Issue 8: 2010

on the

Unlicensed Intentional Radiators

Intelli-Connect



Sanjiv Vyas
Project Engineer
Global EMC Inc.
11 Gordon Collins Dr,
Gormley, ON, L0H 1G0 Canada
Ph: (905) 883-8189

Testing produced for

Rehabtronics Inc.

See appendix A for full customer & EUT details.




Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	

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Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	

Report Scope

This report addresses the EMC verification testing and test results of the **Intelli-Connect**, herein referred to as EUT (Equipment Under Test) performed at Global EMC Labs.

The EUT was tested for compliance against the following standards:


RSS 210 Issue 8:2010
FCC Part 15 Subpart C 15.249:2012

Test procedures, results, justifications, and engineering considerations, if any, follow later in this report.

The results contained in this report relate only to the item(s) tested.

This report does not imply product endorsement by A2LA or any other accreditation agency, any government, or Global EMC Inc.


Opinions/interpretations expressed in this report, if any, are outside the scope of Global EMC Inc accreditation. Any opinions expressed do not necessarily reflect the opinions of Global EMC Inc, unless otherwise stated.

Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	

Summary

The results contained in this report relate only to the item(s) tested.

EUT FCC Certification #, FCC ID:	QIQ-H200W-ICT-V02
EUT Industry Canada Certification #, IC:	10685A-H200WICT
Equipment Under Test	Intelli-Connect
EUT Passed all tests performed.	Yes (see test results summary)
Tests conducted by	Sanjiv Vyas


Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	

Test Results Summary

Standard/Method	Description	Class/Limit	Result
FCC 15.203 RSS-Gen 7.1.2	Antenna Requirement	Unique	Pass See Justification
FCC 15.205 RSS 210 (Table 1) RSS-Gen Table 3	Restricted Bands for intentional operation	QuasiPeak Average	Pass
FCC 15.207 RSS 210	Power Line Conducted Emissions	QuasiPeak Average	Pass See Justifications
FCC 15.209 RSS-210 (Table 2) RSS-GEN Tables 5 & 6	Spurious Radiated emissions	QuasiPeak Average	Pass
FCC 15.249(a) RSS-210 A2.9(a)	Fundamental/Harmonic limits	Peak Average	Pass
Overall Result			PASS

All tests were performed by Sanjiv Vyas.

If the product as tested or otherwise complies with the specification, the EUT is deemed to comply with the requirement and is deemed a 'PASS' grade. If not 'FAIL' grade will be issued.

Client	Rehabtronics Inc.	
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Justifications, Descriptions, or Deviations

The following justifications for tests not performed or deviations from the above listed specifications apply:

For the Antenna requirement specified in FCC 15.203 (RSS 210 section 5.5), this device uses a wire antenna soldered onto the PCB inside the enclosure, and has no provisions for end-user replacement.

For the Restricted Bands of operation requirement specified in FCC15.205 (RSS 210, Table 1), the EUT is designed to only operate between 2.4 to 2.4835 GHz band and does not intentionally transmit in any of the restricted bands.


For FCC 15.207 requirements, when connected to the AC/DC power supply adaptor (Model: FW7555M/05), this product charges and does not transmit therefore conducted emission test was performed in this mode of operation.

Radiated emission measurements (spurious, fundamental and harmonics) test was performed with the EUT in transmitting mode as per FCC 15.209.

All radiated emission measurements were performed at a 3 meter distance, with the extrapolation factor applied as per applicable guidance, where applicable.


As this device is handheld, it was scanned in three orthogonal axis for the applicable radiated emissions and worst case results (Z-axis) are presented in this test report.

A later revision of the standard may have been substituted in place of the previous dated referenced revision. The year of the specification used are listed under applicable standards. Using the later revision accomplishes the goal of ensuring compliance to the intent of the previous specification, while allowing the laboratory to incorporate the extensions and clarifications made available by a later revision.

Client	Rehabtronics Inc.	
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Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	

Applicable Standards, Specifications and Methods

ANSI C63.4:2009	- Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
ANSI C63.10:2009	- American national standard for testing unlicensed wireless devices
CFR 47 FCC 15	- Code of Federal Regulations – Radio Frequency Devices
RSS 210:2010	- Issue 8: Spectrum Management and Telecommunications Radio Standards Specification Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment
CISPR 22:2008	- Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement
ICES-003:2012	- Digital Apparatus - Spectrum Management and Telecommunications Policy Interference-Causing Equipment Standard
ISO 17025:2005	- General Requirements for the competence of testing and calibration laboratories
FCC KDB 558074	- FCC KDB 558074 Digital Transmission Systems, measurements and procedures (Revision 2)

Client	Rehabtronics Inc.	
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Sample calculation(s)


Margin = limit – (received signal + antenna factor + cable loss – pre-amp gain)

Margin = 50.5dBuV/m – (50dBuV + 10dB + 2.5dB – 20dB)

Margin = 8 dB

Document Revision Status

Revision 1 - August 30, 2013
 - First Revision

Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	

Definitions and Acronyms

The following definitions and acronyms are applicable in this report.
See also ANSI C63.14.

AE – Auxillary Equipment.

BW – Bandwidth. Unless otherwise stated, this refers to the 6 dB bandwidth.

EMC – Electro-Magnetic Compatibility

EMI – Electro-Magnetic Immunity

EUT – Equipment Under Test

ITE – Information Technology Equipment with a primary function(s) of entry, storage, display, retrieval, transmission, processing, switching, or control, of data.

LISN – Line impedance stabilization network

NCR – No Calibration Required

RF – Radio Frequency


Client	Rehabtronics Inc.	
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Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	

Testing Facility

Testing for EMC on the EUT was carried out at Global EMC labs at 11 Gordon Collins Dr, Gormley, ON. The testing lab consists of a 3m semi-anechoic chamber calibrated to be able to allow measurements on an EUT with a maximum width or length of up to 2m and height up to 3m. The chamber is equipped with a turn table that is capable of testing devices up to 3300lb in weight. This facility is capable of testing products that are rated for 120 Vac and 240Vac single phase, or 208 Vac 3 phase input. DC capability is also available. The chamber is equipped with an antenna mast that controls polarization and height from the control room adjoining the shielded chamber. Radiated emissions measurements are performed using a Bilog, and Horn antenna where applicable. Conducted emissions, unless otherwise stated, are performed using a LISN.

Calibrations and Accreditations


The 3m semi-anechoic chamber is registered with Federal Communications Commission (FCC, 377448), Industry Canada (IC, 6844A-1) and VCCI (R-4023 and C-4498). This semi-anechoic chamber complies with the requirements of EN55016-2-3:2006, section 7.5 and the site attenuation requirements of EN55016-1-4. This chamber was additionally calibrated for Normalized Site Attenuation (NSA) using test procedures outlined in ANSI C63.4 "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz". The chamber is lined with ferrite tiles and absorption cones to minimize any undesired reflections. The NSA data is kept on file at Global EMC. For radiated susceptibility testing, a 16 point field calibration has been performed on the chamber. The field uniformity data is kept on file at Global EMC. Global EMC Inc is accredited to ISO 17025 by A2LA with Testing Certificate #2555.01. The laboratories current scope of accreditation listing can be found as listed on the A2LA website. All measuring equipment is calibrated on an annual or bi-annual basis as listed for each respective test.

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Testing Environmental Conditions and Dates

Following were the environmental conditions in the facility during time of testing –

Date	Test	Initials	Ambient Temperature (°C)	Relative Humidity (%)	Pressure (kPa)
Aug 23 & 24, 2013	Power Line Conducted Emissions	SV	21-24	40 - 45%	96 - 100
Aug 09 & 12, 2013	Radiated Emissions	SV	21-24	40 - 45%	96 - 100
Aug 09, 2013	20 dB Bandwidth Measurement	SV	21 – 24	40 - 45%	96 - 100
Aug 12, 2013	Average measurement using Duty cycle	SV	21 – 24	40 - 45%	96 - 100

Client	Rehabtronics Inc.	
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Detailed Test Results Section

Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	

Power Line Conducted Emissions

Purpose

The purpose of this test is to ensure that the RF energy unintentionally emitted from the EUT's power line does not exceed the limits listed below as defined in the applicable test standard, as measured from a LISN. This helps protect lower frequency radio services such as AM radio, shortwave radio, amateur radio operators, maritime radio, CB radio, and so on, from unwanted interference.

Limits & Method

The limits are as defined in 47 CFR FCC Part 15 Section 15.207 & 15.107


Method is as defined in ANSI C64:2009

Average Limits		QuasiPeak Limits	
150 kHz – 500 kHz	56 to 46 dBuV	150 kHz – 500 kHz	66 to 56 dBuV
500 kHz – 5 MHz	46 dBuV	500 kHz – 5 MHz	56 dBuV
5 MHz – 30 MHz	50 dBuV	500 kHz – 30 MHz	60 dBuV

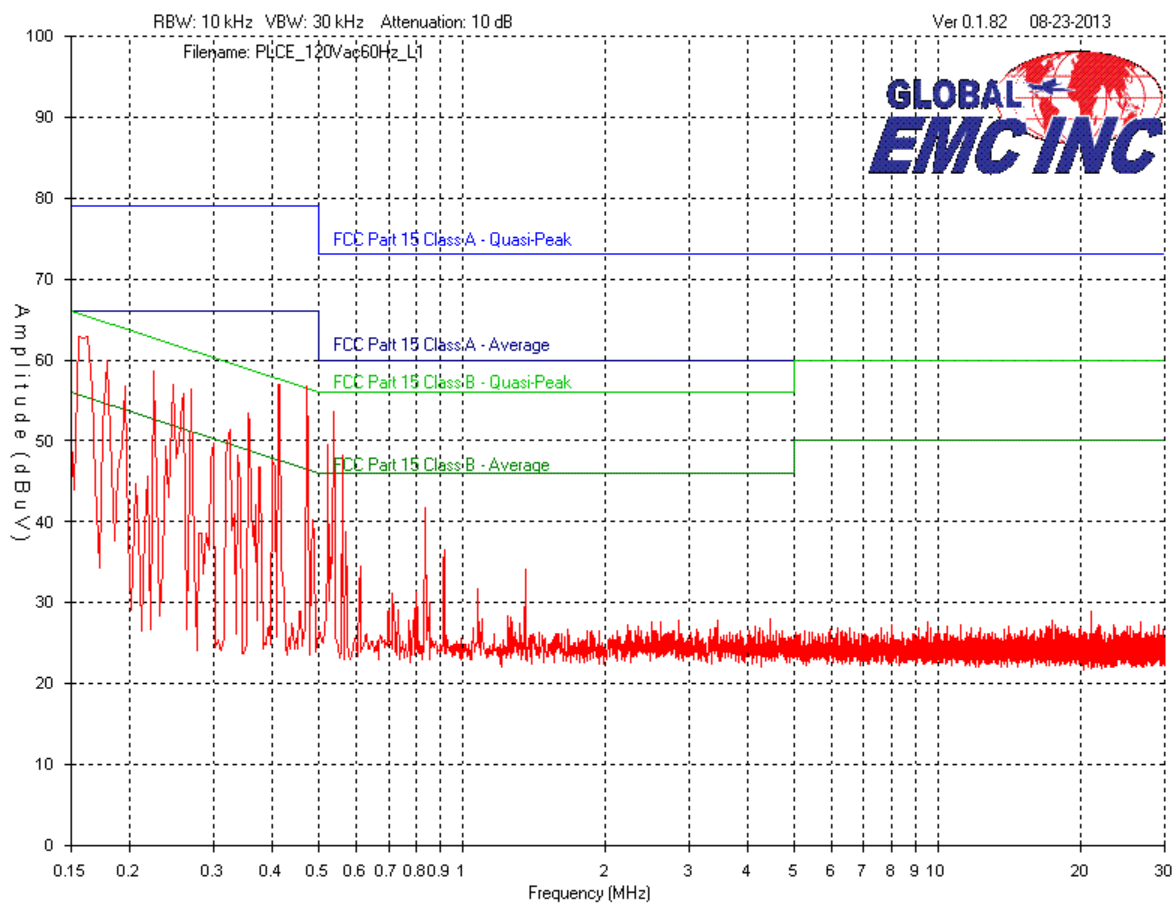
The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.


Note: If the Peak or Quasi Peak detector measurements do not exceed the Average limits, then the EUT is deemed to have passed the requirements.

Both limits are applicable, and each is specified as being measured with a 9 kHz measurement bandwidth .

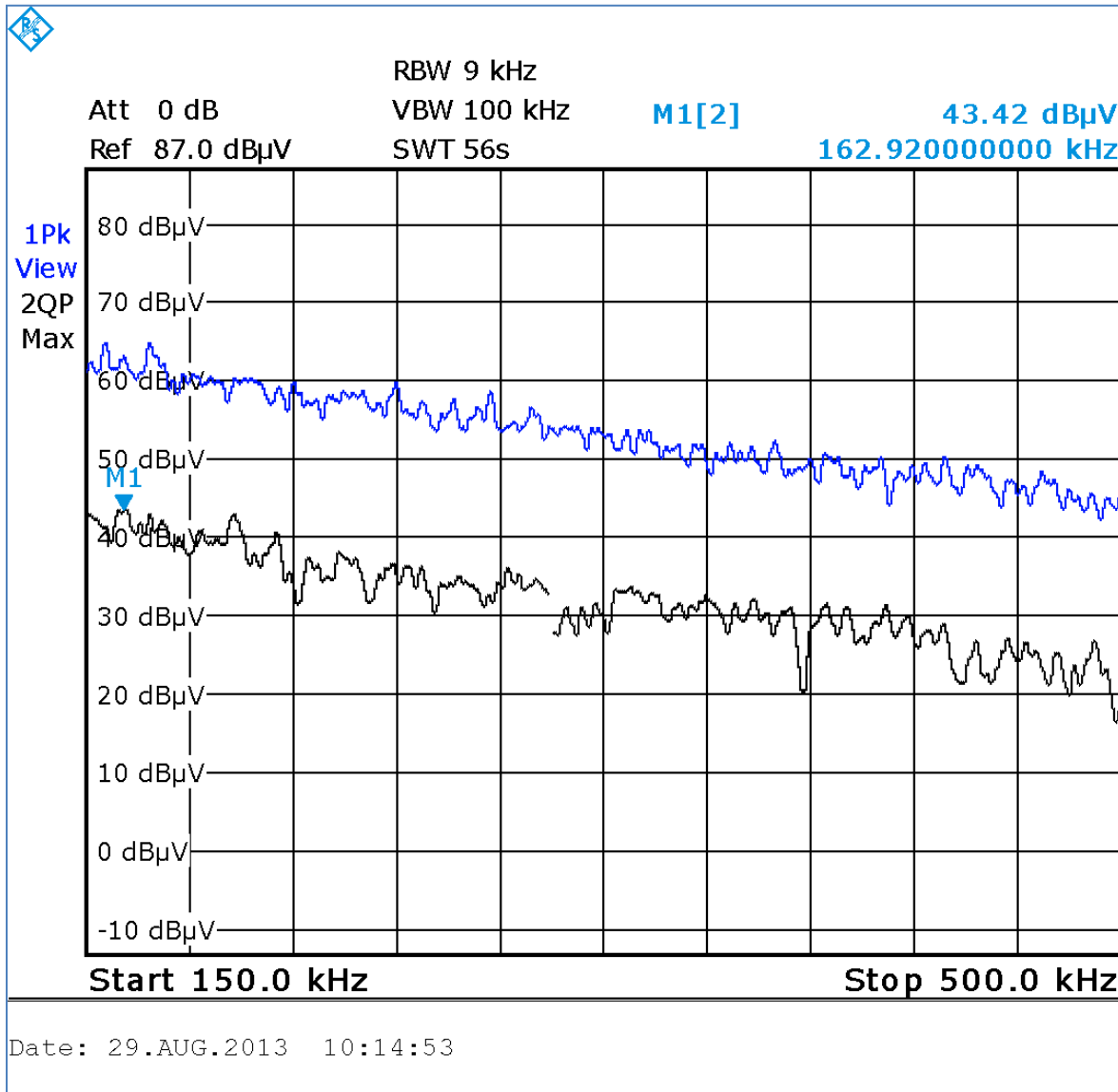
Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	


Peak Emissions Graph - L1 (Line) 120 Vac @ 60 Hz (0.15 – 30MHz)



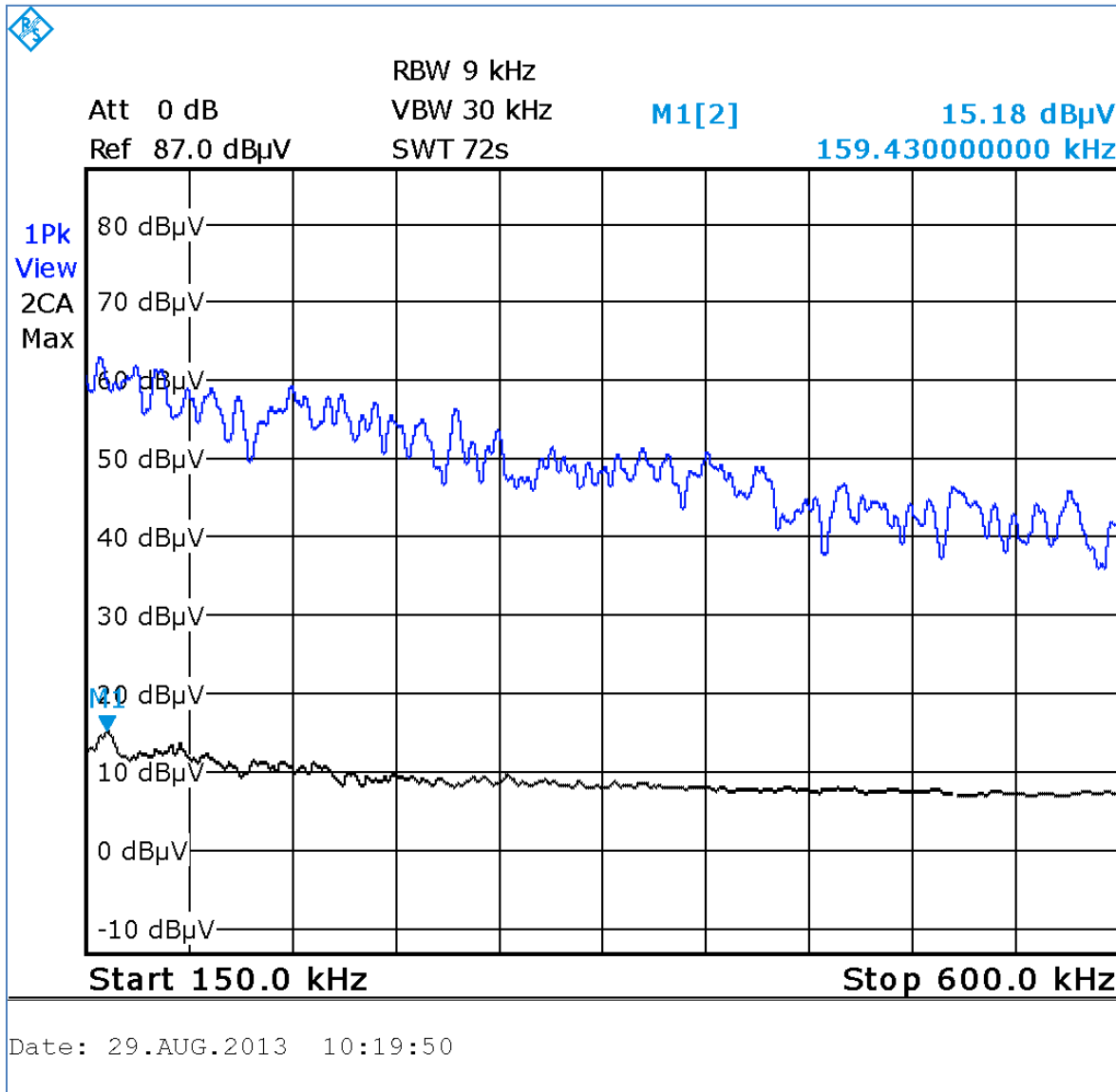
Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	


Peak v/s Quasi Peak Emissions Graph - L1 (Line) 120 Vac @ 60 Hz (0.15-0.5MHz)



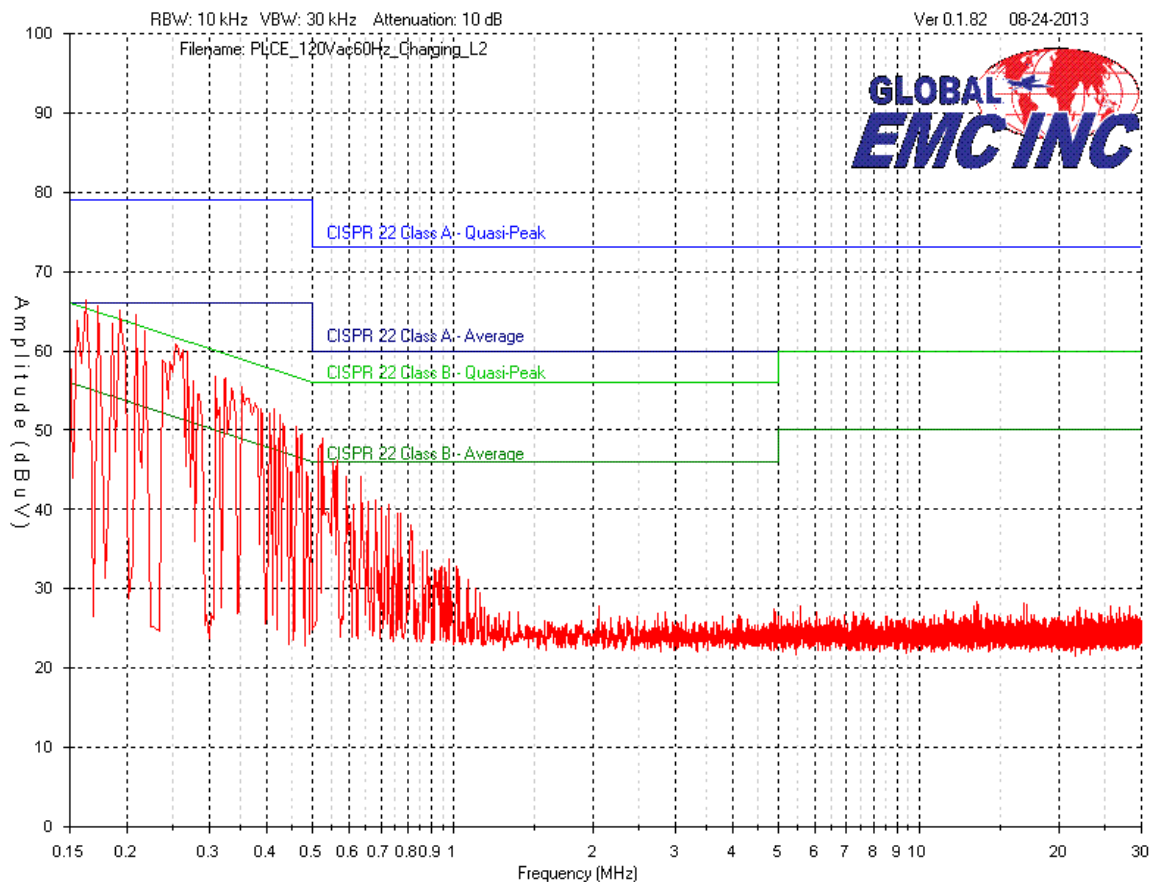
Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	


Peak v/s Average Emissions Graph - L1 (Line) 120 Vac @ 60 Hz (0.15-0.6MHz)



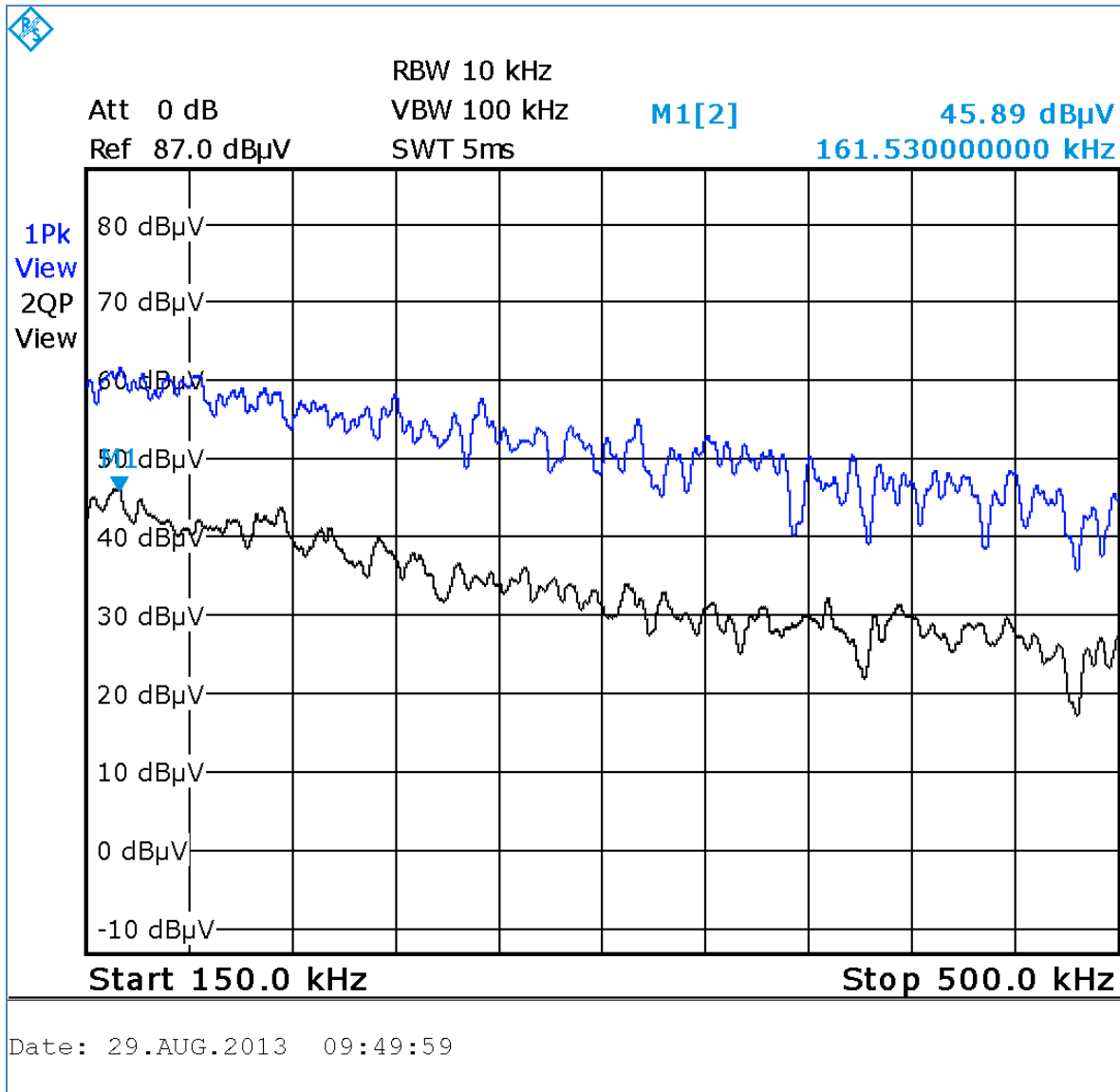
Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	


Peak Emissions Graph - L2 (Neutral) 120 Vac @ 60 Hz (0.15-30MHz)



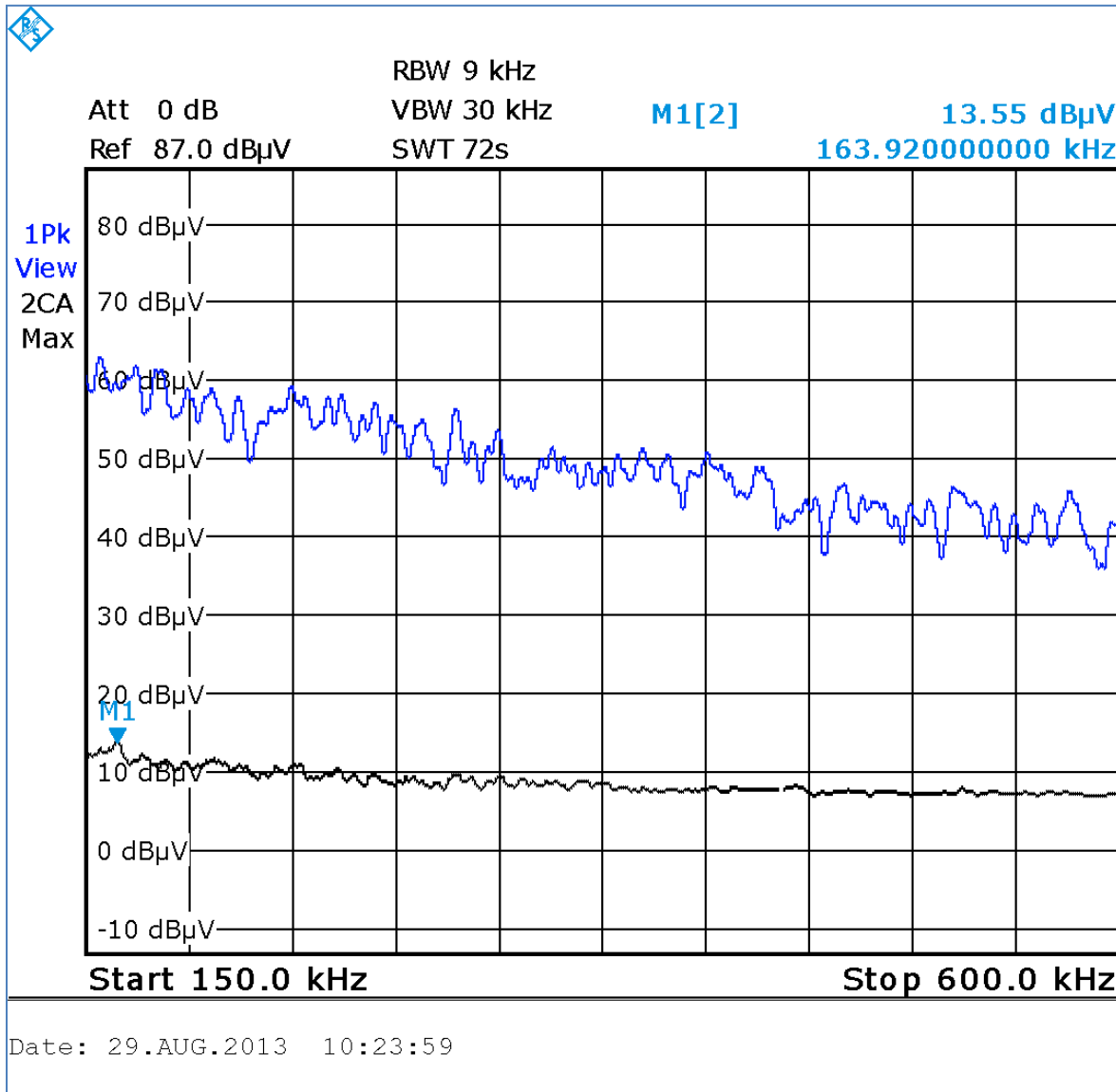
Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	


Peak v/s Quasi Peak Emissions Graph – L2 (Neutral) 120 Vac @ 60 Hz (0.15-0.5MHz)



Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	

Peak v/s Average Emissions Graph – L2 (Neutral) 120 Vac @ 60 Hz (0.15-0.6MHz)



Client	Rehabtronics Inc.	
Product	Intelli-Connect	
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Final Measurements


Note: 1) See 'Appendix B – EUT & Test Setup Photographs' for photos showing the test set-up for the highest line conducted emission.

2) Since the Peak emission measurement exceeds the Quasi Peak and Average limits, both Quasi Peak and Average detector was used for final measurement and EUT has deemed to have passed the standard requirements.

Test Equipment List

Equipment	Model No.	Manufacturer	Last calibration date	Next calibration due date	Asset #
Spectrum Analyzer	ESL 6	Rohde & Schwarz	Oct 06, 2011	Oct 06, 2013	GEMC 160
LISN	FCC-LISN-50/250-16-2-01	FCC	Feb 06, 2013	Feb 06, 2015	GEMC 65
RF Cable 7m	LMR-400-7M-50OHM-MN-MN	LexTec	NCR	NCR	GEMC 28
RF Cable 1m	LMR-400-1M-50OHM-MN-MN	LexTec	NCR	NCR	GEMC 29
Attenuator 10 dB	FP-50-10	Trilithic	NCR	NCR	GEMC 42

This report module is based on GEMC template "FCC – Power Line Conducted Emissions Class B_Rev1"

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Radiated Emissions

Purpose

The purpose of these tests is to ensure that the RF energy emitted from the EUT does not exceed the limits listed below as defined in the applicable test standard, as measured from a receiving antenna. This helps protect broadcast radio services such as television, FM radio, pagers, cellular telephones, emergency services, and so on, from unwanted interference. RF energy unintentionally emitted from the EUT, and the intentionally emitted fundamental and its harmonics, have limits as shown below.

Limit(s) and Method

The method is as defined in ANSI C63.4:2009 and as per applicable standards. For the fundamental and harmonics, the limits are as defined in FCC Part 15, Section 15.249 (at 3 m):

Fundamental frequency	Field strength limit of fundamental ²	Field strength limit of harmonics ²
2400-2483.5 MHz	50 mV/m (93.97 dBuV/m)	500 uV/m (53.87 dBuV/m)

For other spurious emissions, the limits are as defined in FCC Part 15, Section 15.209:


0.009 MHz – 0.490 MHz, 2400/F(kHz) uV/m at 300 m¹
0.490 MHz – 1.705 MHz, 24000/F(kHz) uV/m at 30 m¹
1.705 MHz – 30 MHz, 30 uV/m at 30 m¹
30 MHz – 88 MHz, 100 uV/m (40.0 dBuV/m¹) at 3 m
88 MHz – 216 MHz, 150 uV/m (43.5 dBuV/m¹) at 3 m
216 MHz – 960 MHz, 200 uV/m (46.4 dBuV/m¹) at 3 m
Above 960 MHz, 500 uV/m (54.0 dBuV/m¹) at 3 m
Above 1000 MHz², 500 uV/m (54 dBuV/m) at 3m

Peak field strengths are limited to be at most 20 dB above the average limits as defined above at the corresponding frequencies.

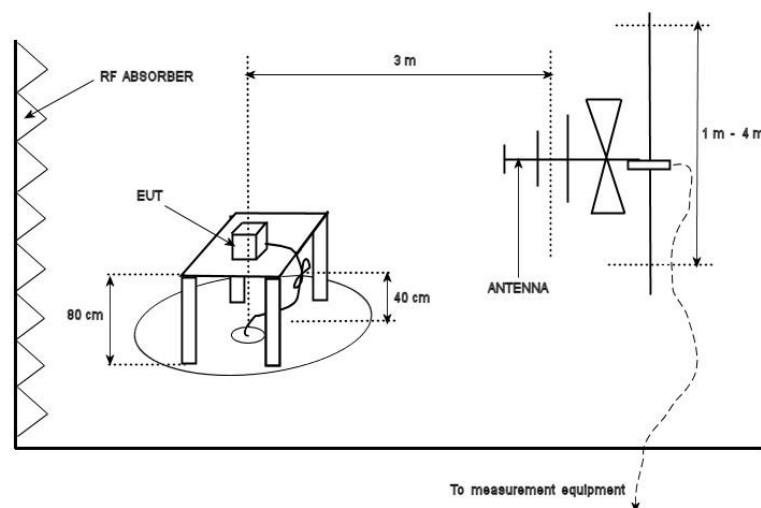
¹Limit is with 120 kHz measurement bandwidth and a using a Quasi Peak detector.

²Limit is with 1 MHz measurement bandwidth and using an Average detector. Where an average detector is stated, a peak limit of 20 dB higher additionally applies.

Devices scanned below 30 MHz are scanned at a 3 meter test distance, and in accordance with FCC Part 15, Subpart A, Section 15.31, an extrapolation factor of 40dB/decade was used. For example for 3 meter measurements, an extrapolation factor 40 dB from 40 Log (30m / 3m) is applied

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Typical Radiated Emissions Setup



Measurement Uncertainty

The expanded measurement uncertainty is calculated in accordance with CISPR 16-4-2 and is ± 4.4 dB with a 'k=2' coverage factor and a 95% confidence level.


Preliminary Graphs

The graphs shown below are peak scans for graphical illustration only. For final measurements with the appropriate detector, please refer to the final measurement table where applicable. The graph shown below is a maximized peak measurement graph, measured with a resolution bandwidth greater than the final required detector and over a full 0-360° rotation. This peaking process is done as a worst case measurement. This process enables the detection of frequencies of concern for final measurement, and provides considerable time savings.

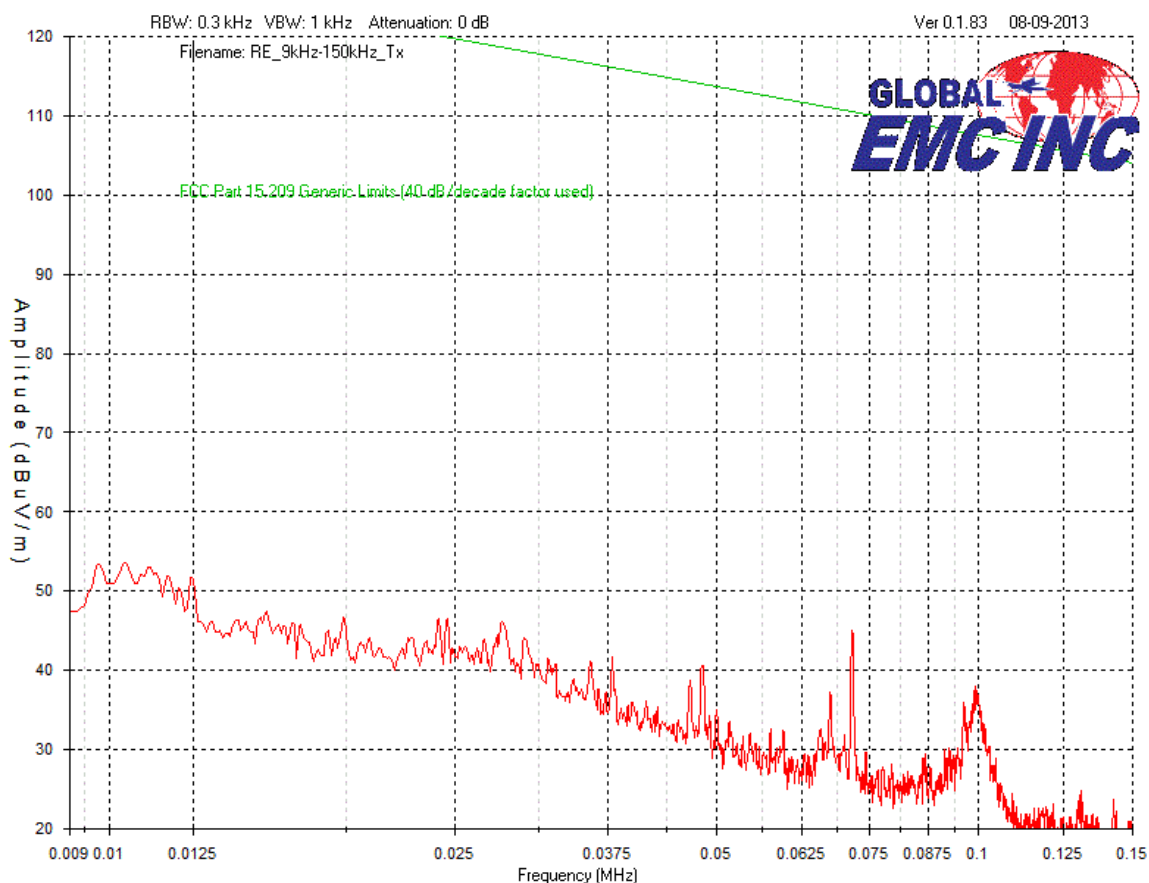
In accordance with FCC Part 15, Subpart A, Section 15.33, the device was scanned to the 10th harmonic (a minimum of 26 GHz). No emissions were detected above 18GHz.


Low, middle, and high channel modes were investigated. The worst case (middle channel) graphs are presented. As this device is handheld, it was scanned in three orthogonal axis for the applicable radiated emissions and worst case results (Z-axis) are presented in this test report with the EUT operating in transmitting mode.

Emissions are also verified at the band edges, and shown in the *Final Measurements* table.

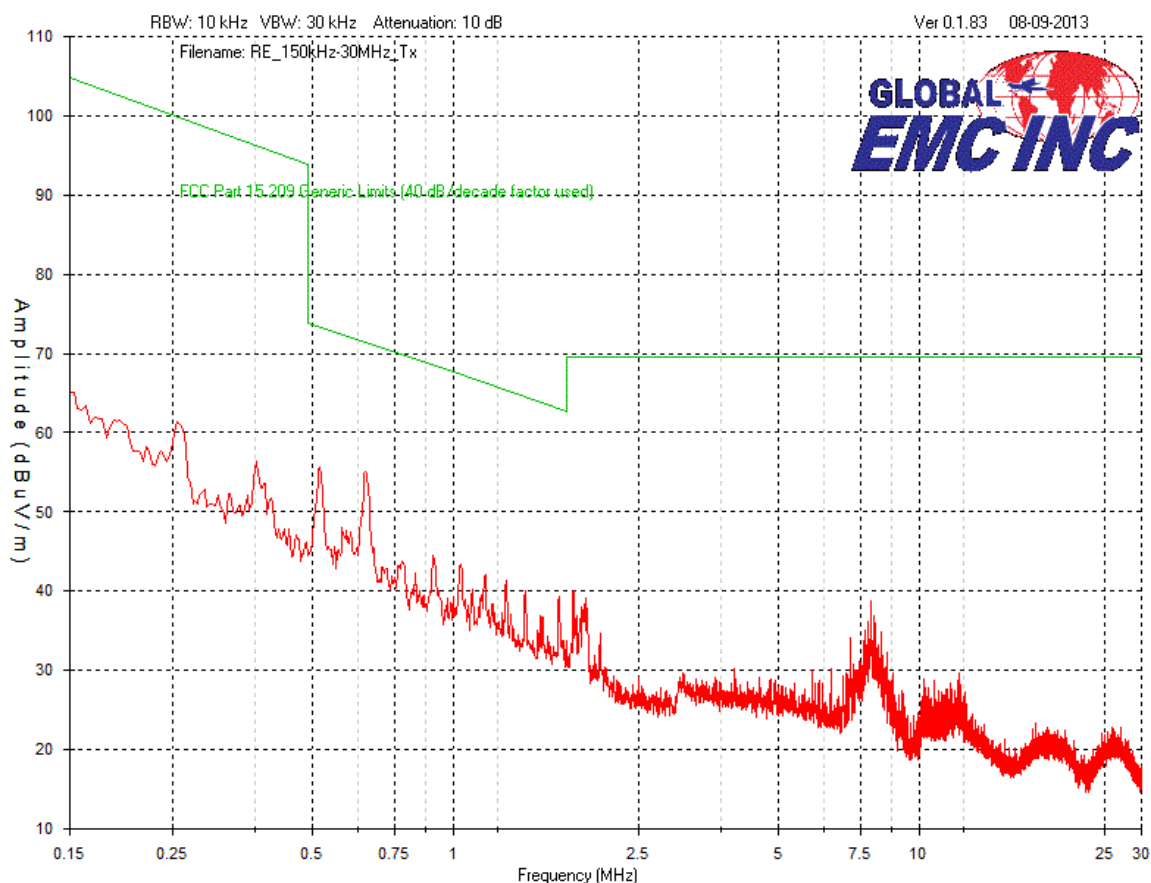
Client	Rehabtronics Inc.	
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Peak Emissions Graph – Middle Channel, 9 kHz – 150 kHz



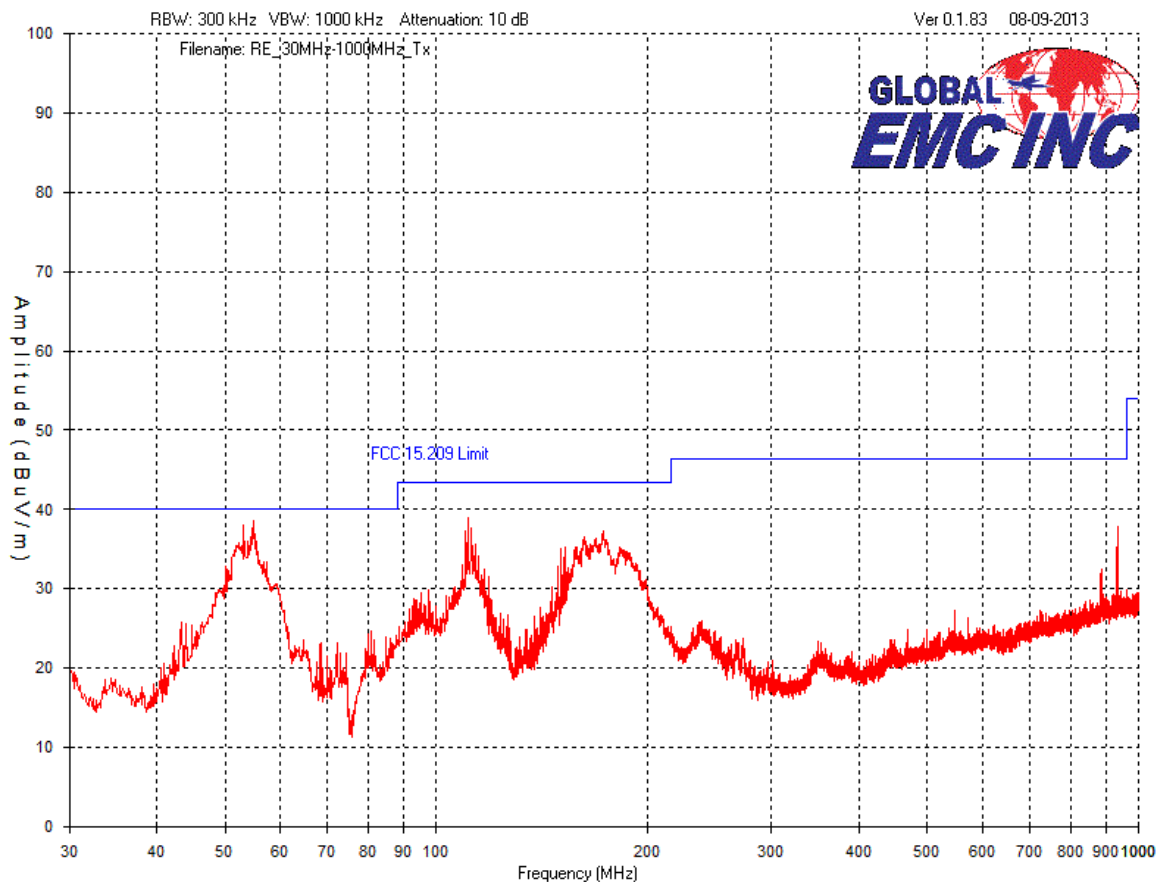
Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	


Peak Emissions Graph – Middle Channel, 150 kHz – 30 MHz



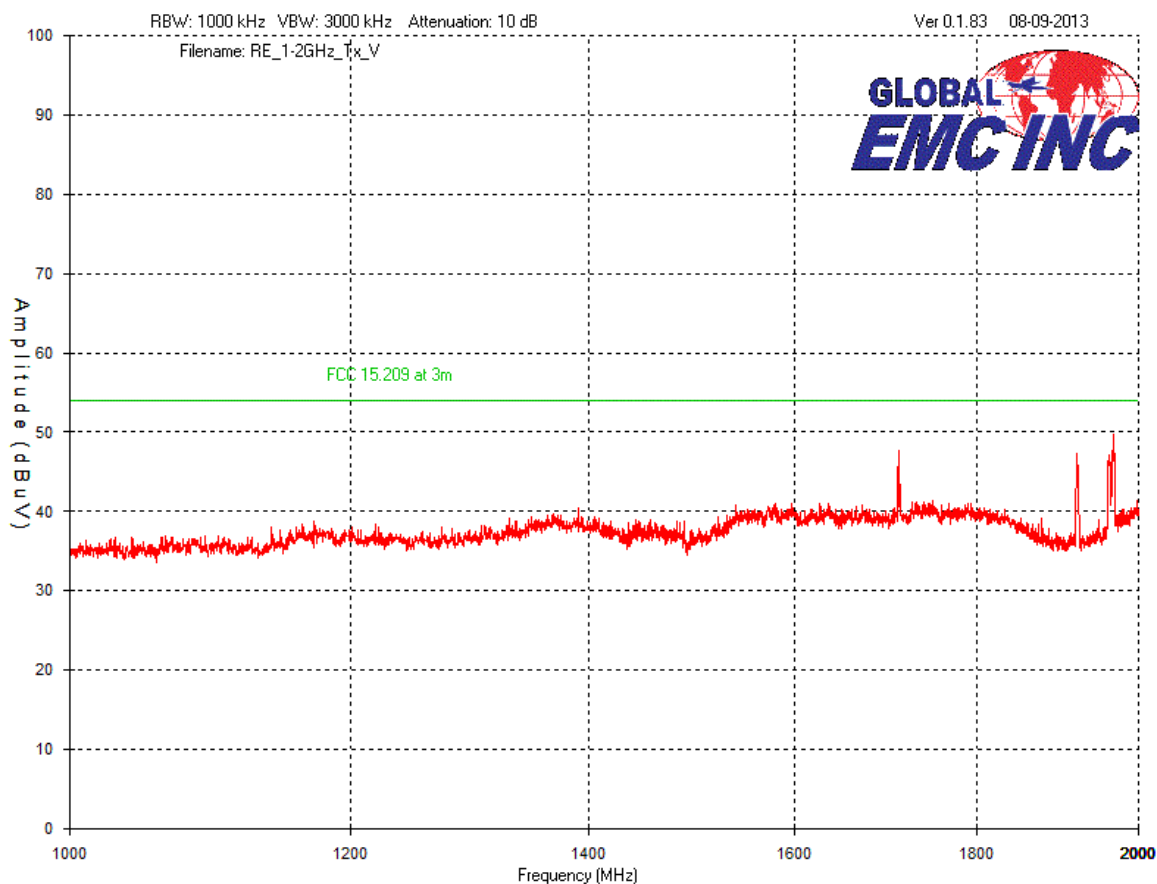
Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	


Vertical – Peak Emissions Graph – Middle Channel, 30 MHz – 1 GHz



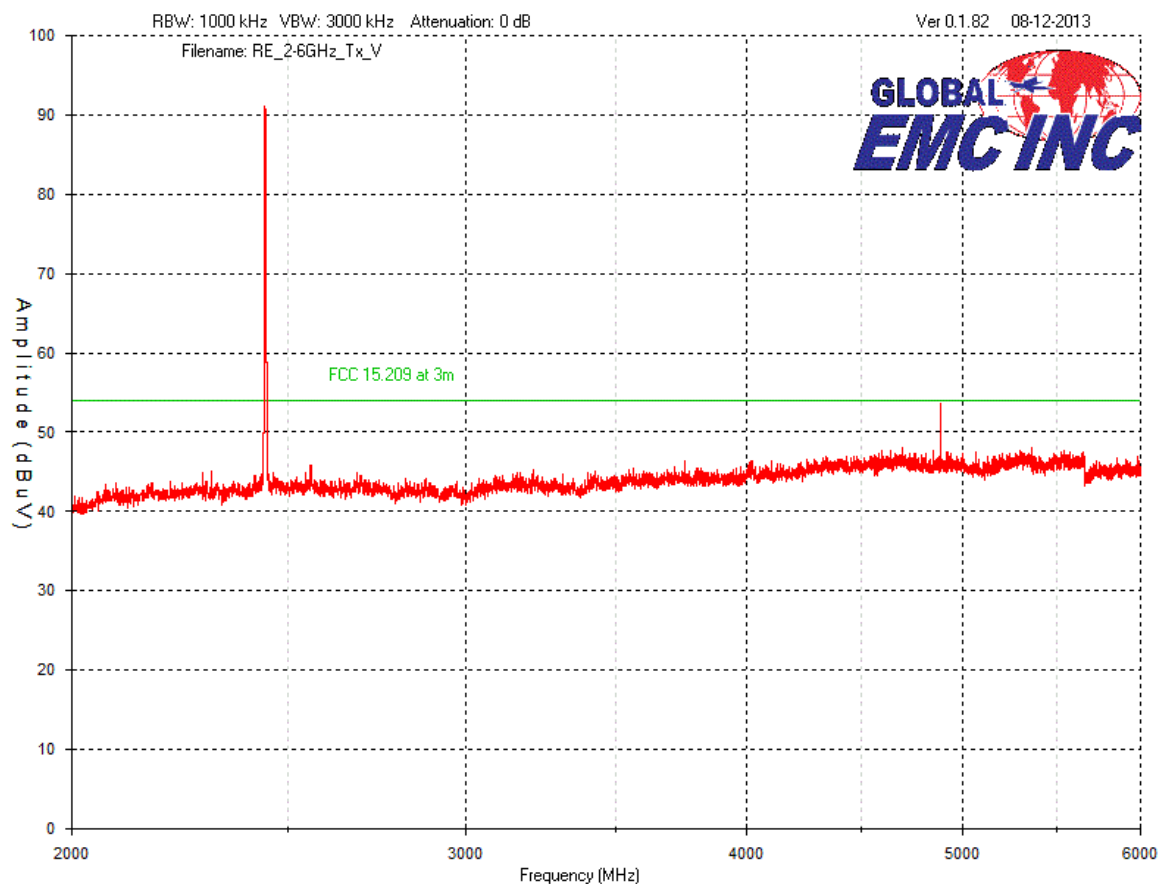
Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	


Vertical – Peak Emissions Graph – High Channel, 1 GHz – 2 GHz



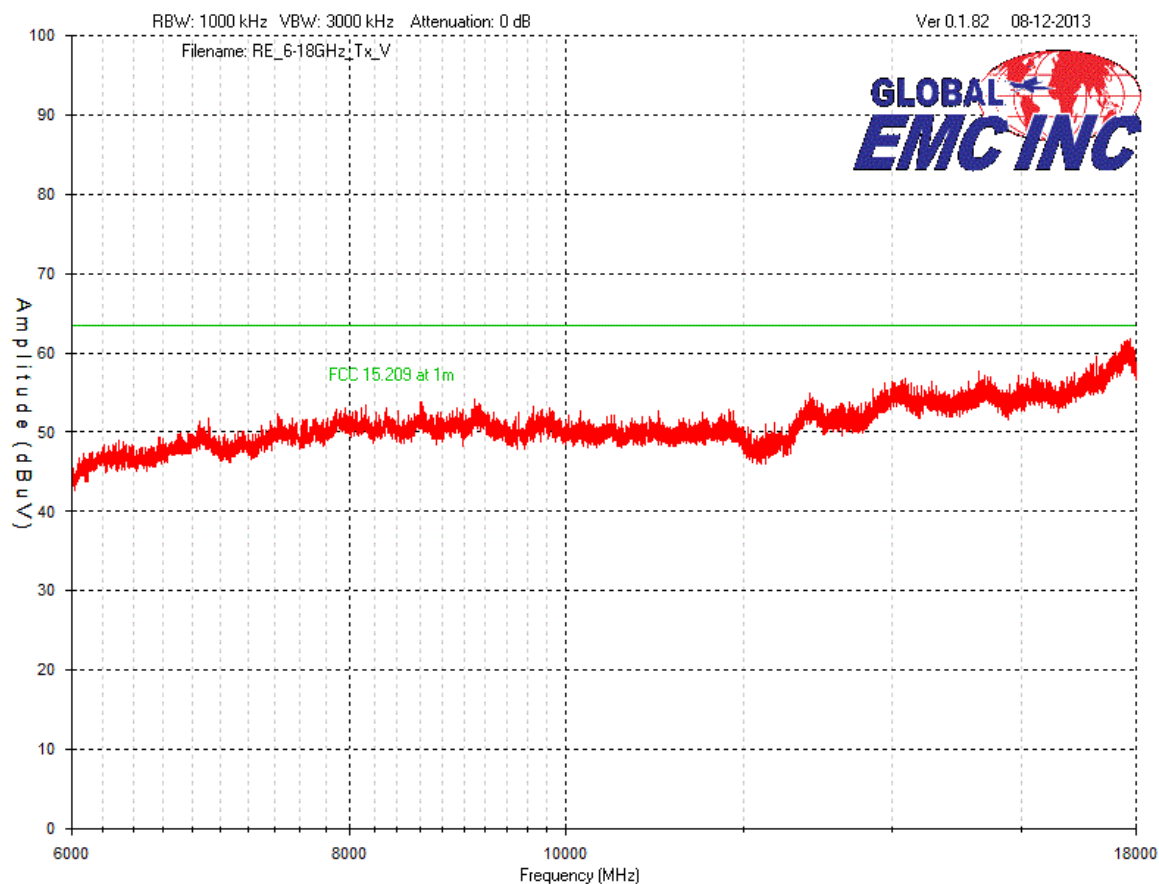
Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	


Vertical – Peak Emissions Graph – High Channel, 2 GHz – 6 GHz



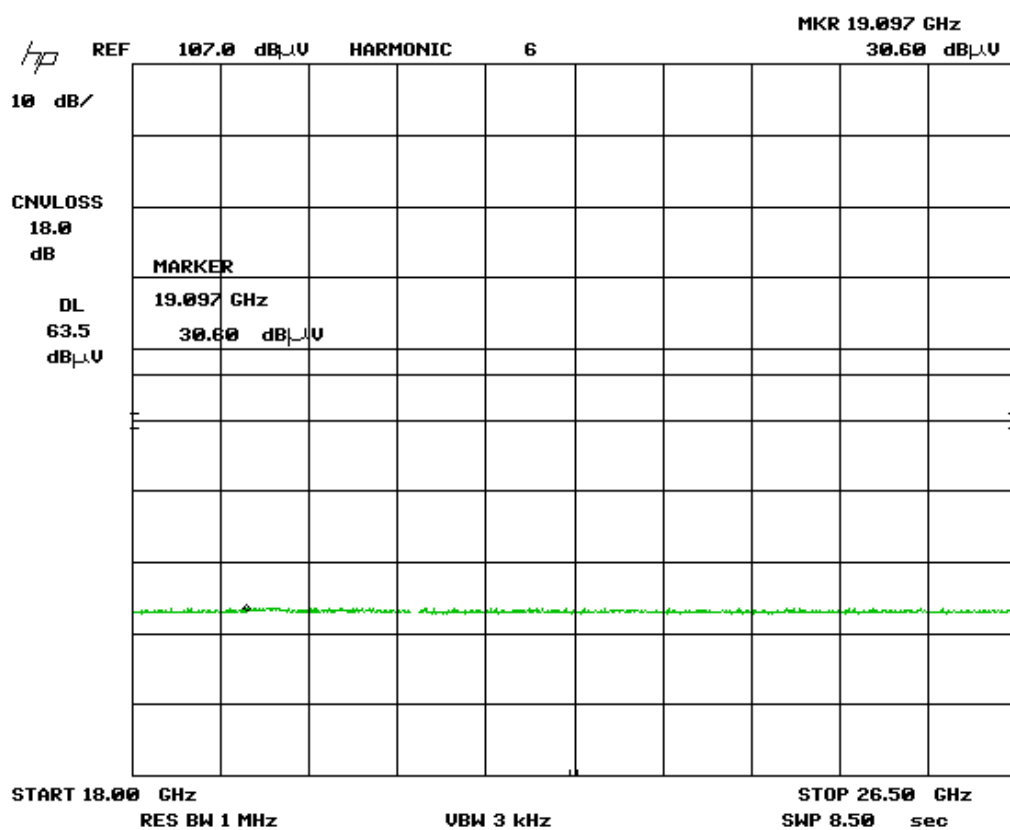
Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	


Vertical – Peak Emissions Graph – High Channel, 6 GHz – 18 GHz



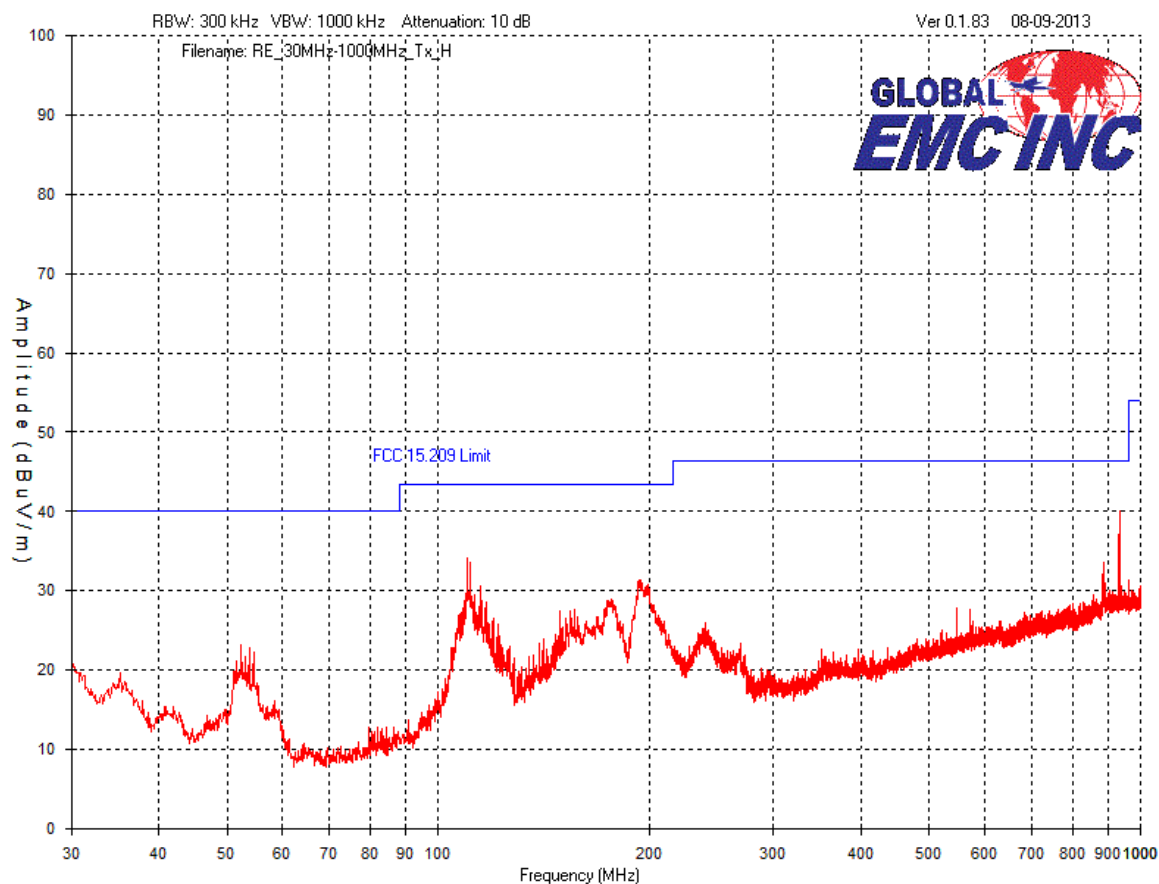
Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	


Vertical – Average Emissions Graph – Middle Channel, 18 GHz – 26.5 GHz



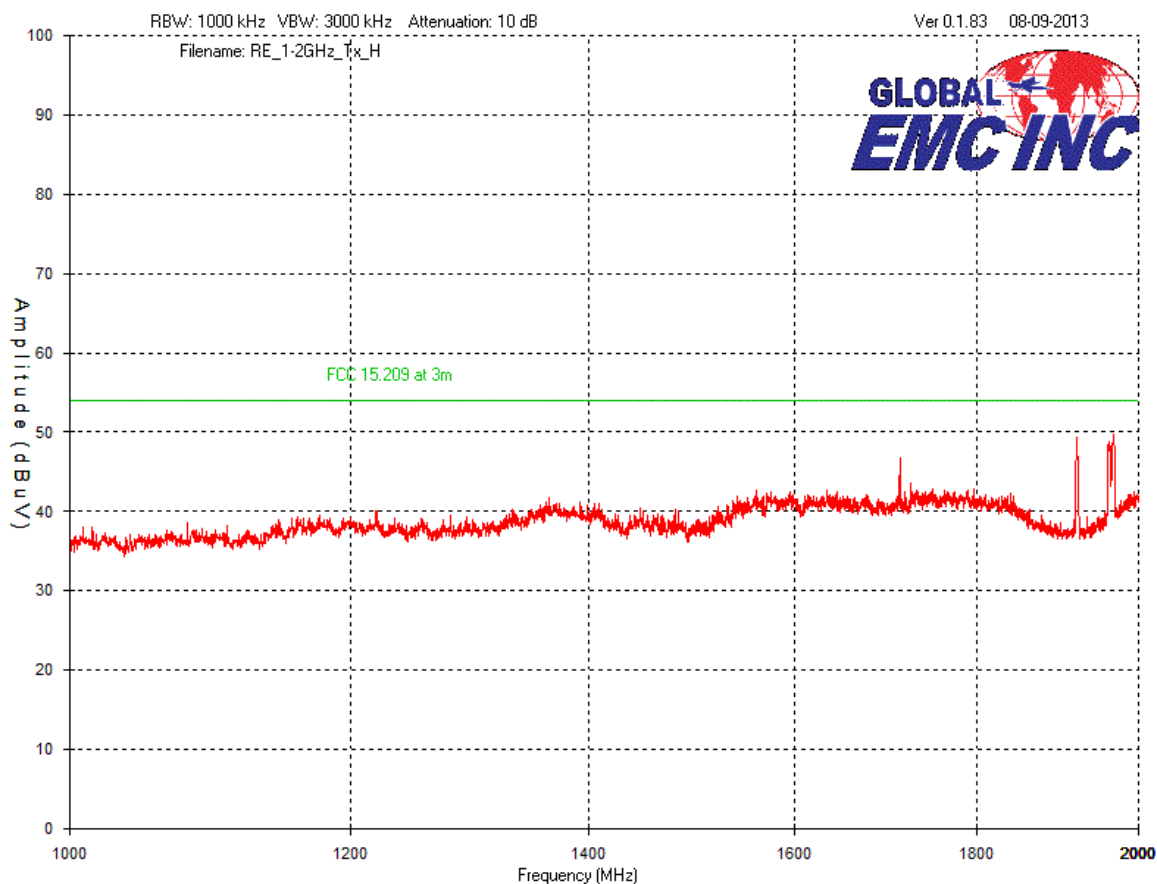
Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	


Horizontal – Peak Emissions Graph – High Channel, 30 MHz – 1 GHz



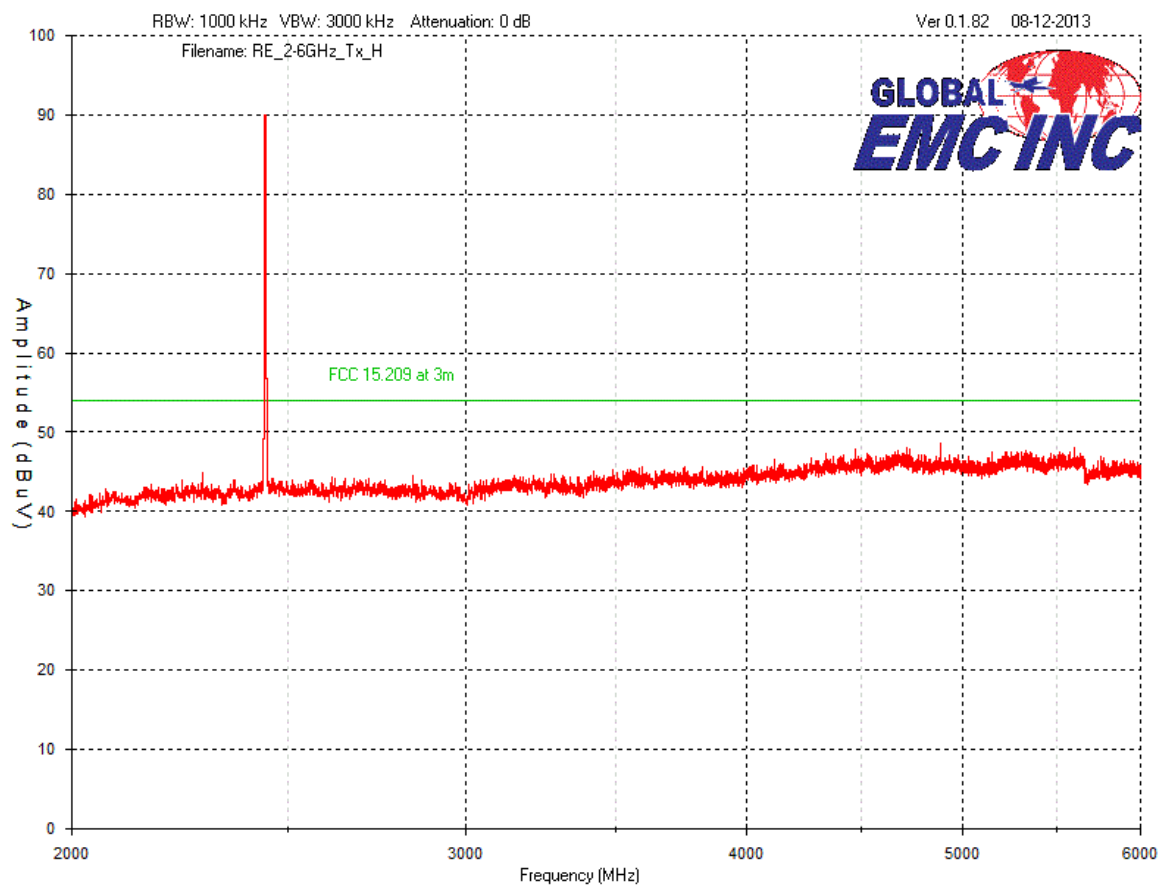
Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	


Horizontal – Peak Emissions Graph – High Channel, 1 GHz – 2 GHz



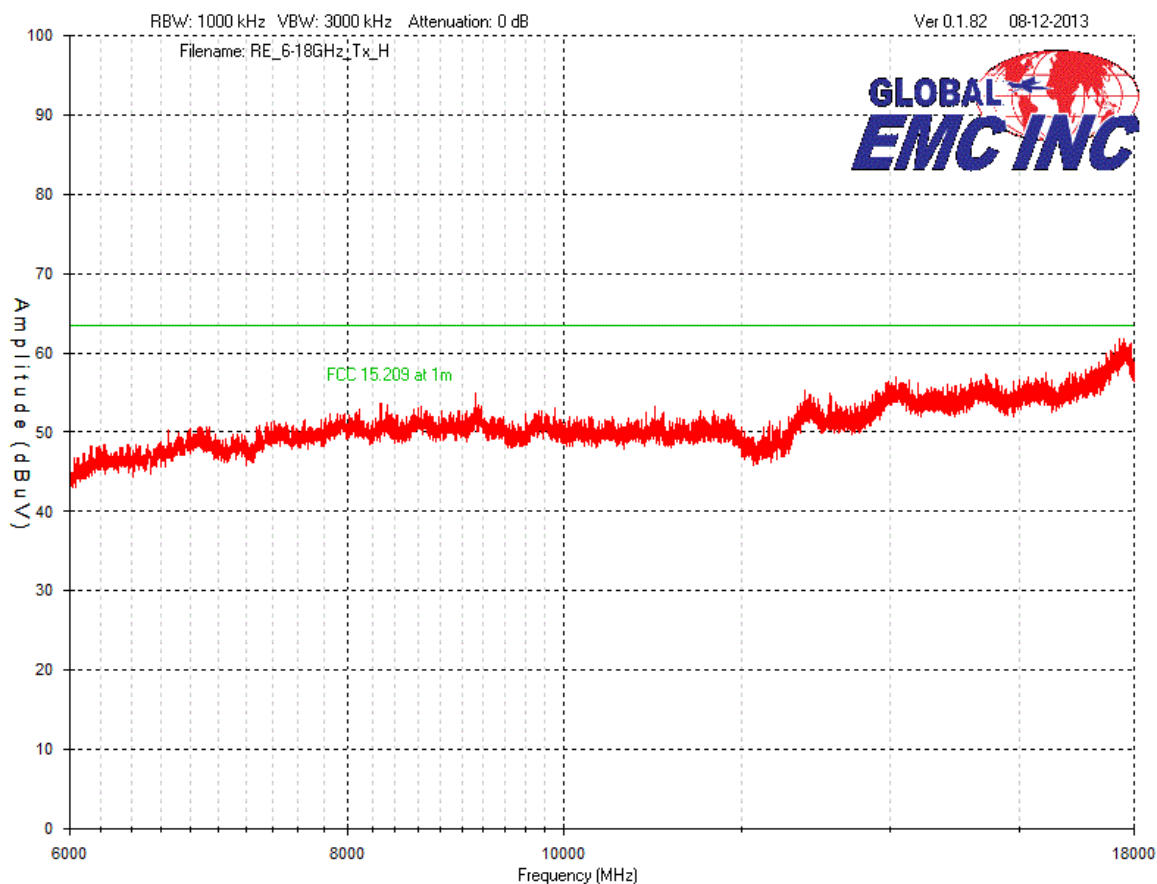
Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	


Horizontal – Peak Emissions Graph – High Channel, 2 GHz – 6 GHz



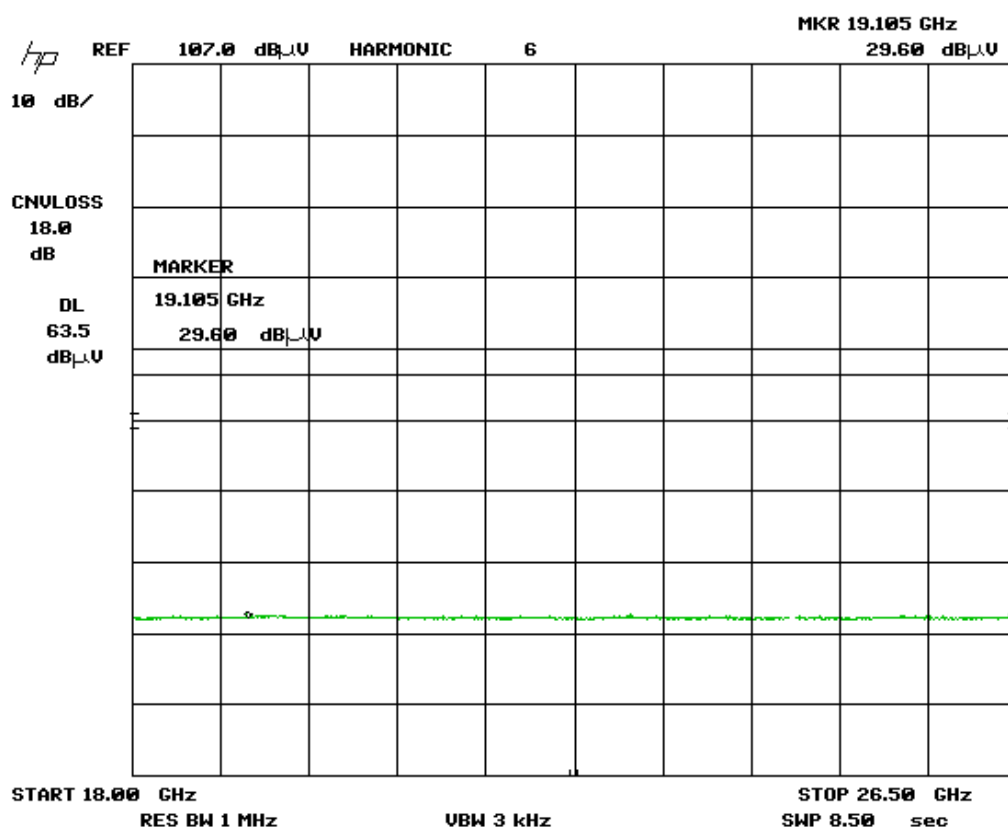
Client	Rehabtronics Inc.	
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Horizontal – Peak Emissions Graph – High Channel, 6 GHz – 18 GHz



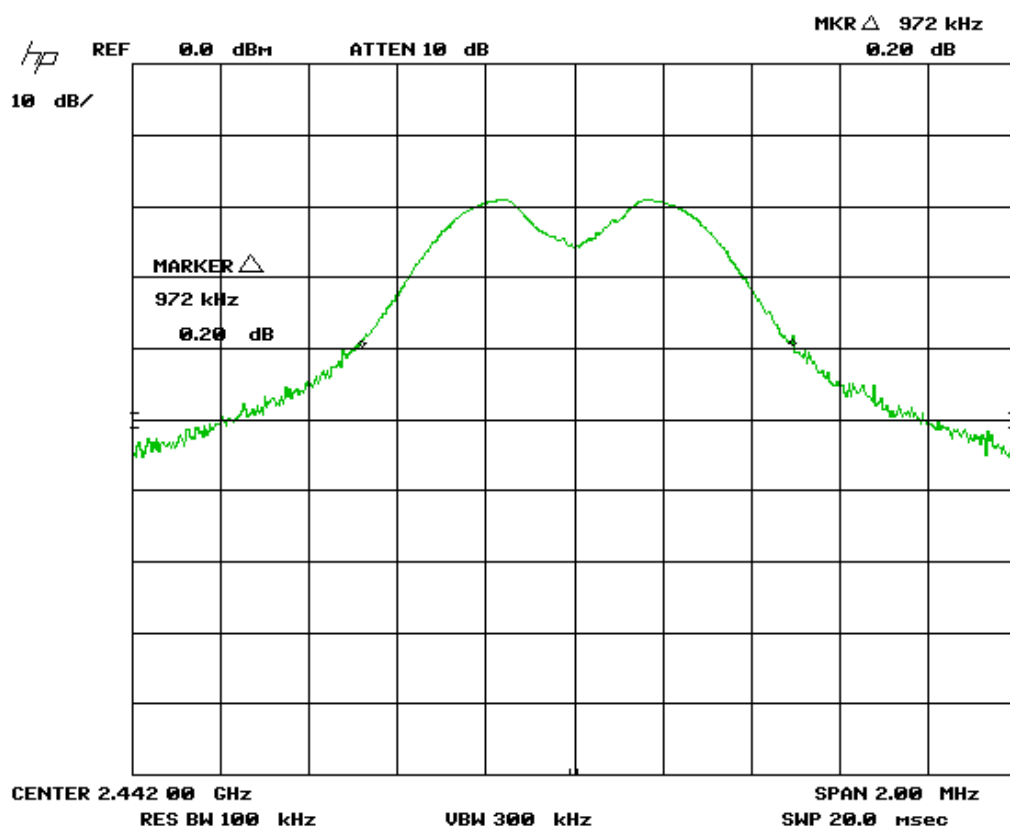
Client	Rehabtronics Inc.	
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Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	


Horizontal – Average Emissions Graph – Middle Channel, 18 GHz – 26.5 GHz



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20dB Measurement Bandwidth

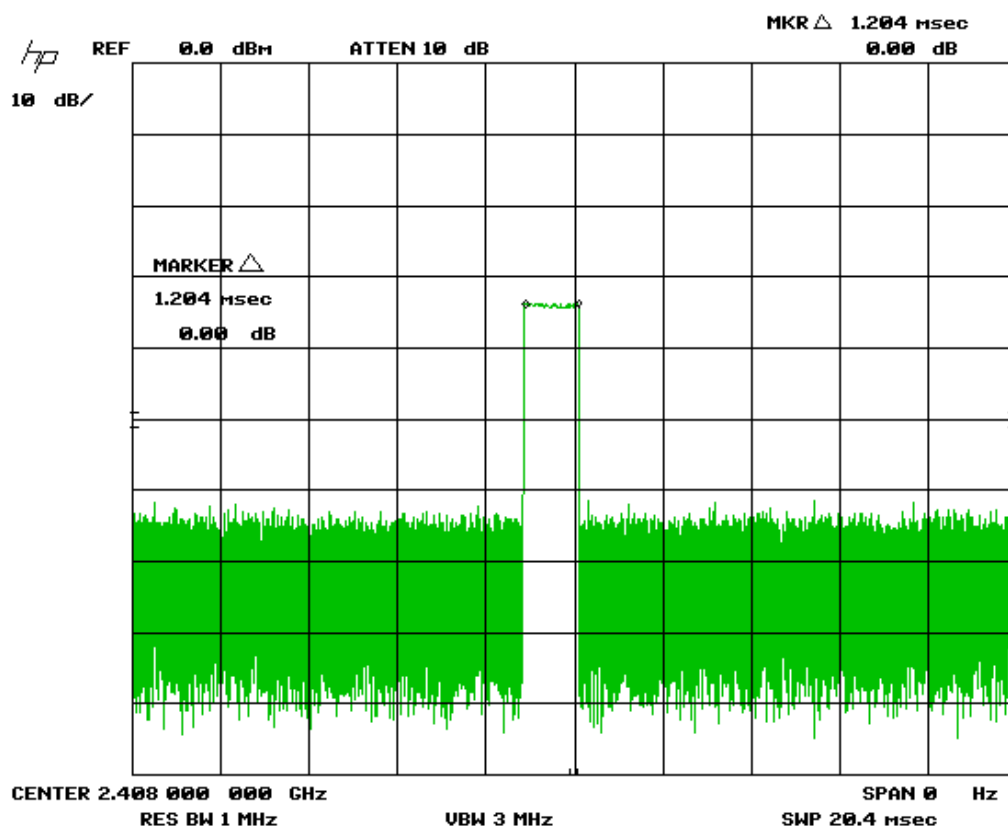



Client	Rehabtronics Inc.	
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Calculation of Average Value using Duty Cycle

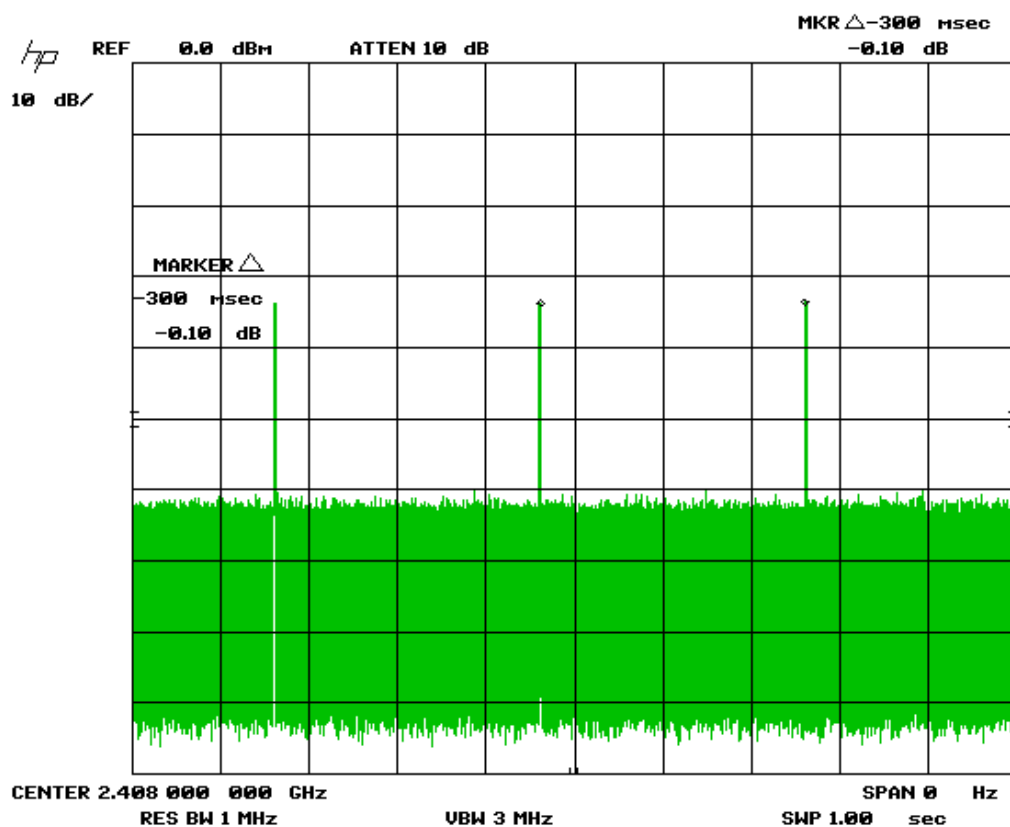
The averaging factor is to be calculated from the On Time per pulse train using $20\log(\text{On Time}/100\text{ms})$ as specified in ANSI C63.10. The measured On time for each pulse is 1.204msec. Each pulse train is 300mS as specified and measured, however a worst case maximum averaging factor of -20dB was applied to the peak considering pulse train length as 10ms and pulse On time as 1msec.


Pulse On Time



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Period of pulse train = 300mS



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Final Measurements

The fundamental was measured to be 94.7 dBuV/m at 3 meters.

The following measurements were made at the harmonics shown in the above graphs, and at the band edges. All emissions above the fourth harmonic are below the noise floor

Maximum of -20dB duty cycle correction factor is applicable to the peak pulse amplitude for calculating the average emissions of this unit.

Project Name / Number	Rehabtronics Inc / Intelli-Connect / 21524										
Test Frequency (MHz)	Detection mode (Q-Peak)	Antenna polarity (Horz/Vert)	Raw signal dB(μV)	Antenna factor dB	Cable loss dB + Preselector	Attenuator dB	Pre-Amp Gain dB	Received signal dB(μV/m)	Emission limit dB(μV/m)	Margin dB(μV)	Result
Low Channel (2401MHz)											
2400	Peak	Horz	51.9	30.6	5.4	0.0	36.2	51.7	74.0	22.3	Pass (Bandedge)
2400	Avg	Horz	50.7	30.6	5.4	0.0	36.2	50.5	54.0	3.5	Pass (Bandedge)
2400	Peak	Vert	53.6	30.6	5.4	0.0	36.2	53.4	74.0	20.6	Pass (Bandedge)
2400	Avg	Vert	52.2	30.6	5.4	0.0	36.2	52.0	54.0	2.0	Pass (Bandedge)
2398	Peak	Horz	58.0	30.6	5.4	0.0	36.2	57.8	74.0	16.2	Pass
2398	Avg	Horz	44.3	30.6	5.4	0.0	36.2	44.1	54.0	9.9	Pass
2398	Peak	Vert	59.9	30.6	5.4	0.0	36.2	59.7	74.0	14.3	Pass
2398	Avg	Vert	45.1	30.6	5.4	0.0	36.2	44.9	54.0	9.1	Pass
2401	Peak	Horz	85.9	30.6	5.4	0.0	36.2	85.7	114.0	28.3	Pass
2401	Avg	Horz	65.9	30.6	5.4	0.0	36.2	65.7	94.0	28.3	Pass
2401	Peak	Vert	94.2	30.6	5.4	0.0	36.2	94.0	114.0	20.0	Pass
2401	Avg	Vert	74.2	30.6	5.4	0.0	36.2	74.0	94.0	20.0	Pass
4802	Peak	Horz	60.5	33.7	7.7	0.0	35.7	66.2	74.0	7.8	Pass
4802	Avg	Horz	40.5	33.7	7.7	0.0	35.7	46.2	54.0	7.8	Pass
4802	Peak	Vert	60.3	33.7	7.7	0.0	35.7	66.0	74.0	8.0	Pass
4802	Avg	Vert	40.3	33.7	7.7	0.0	35.7	46.0	54.0	8.0	Pass
7203	Peak	Horz	48.9	33.7	9.6	0.0	35.7	56.5	74.0	17.5	Pass
7203	Avg	Horz	28.9	33.7	9.6	0.0	35.7	36.5	54.0	17.5	Pass
7203	Peak	Vert	48.6	33.7	9.6	0.0	35.7	56.2	74.0	17.8	Pass
7203	Avg	Vert	28.6	33.7	9.6	0.0	35.7	36.2	54.0	17.8	Pass


Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	

Mid channel (2442MHz)											
2442	Peak	Horz	89.1	30.6	5.4	0.0	36.2	88.9	114.0	25.1	Pass
2442	Avg	Horz	69.1	30.6	5.4	0.0	36.2	68.9	94.0	25.1	Pass
2442	Peak	Vert	94.9	30.6	5.4	0.0	36.2	94.7	114.0	19.3	Pass
2442	Avg	Vert	74.7	30.6	5.4	0.0	36.2	74.5	94.0	19.5	Pass
4884	Peak	Horz	60.4	33.7	7.7	0.0	35.7	66.1	74.0	7.9	Pass
4884	Avg	Horz	40.4	33.7	7.7	0.0	35.7	46.1	54.0	7.9	Pass
4884	Peak	Vert	61.1	33.7	7.7	0.0	35.7	66.8	74.0	7.2	Pass
4884	Avg	Vert	41.1	33.7	7.7	0.0	35.7	46.8	54.0	7.2	Pass
7326	Peak	Vert	49.3	37.9	9.6	0.0	35.9	60.9	74.0	13.1	Pass
7326	Avg	Vert	29.3	37.9	9.6	0.0	35.9	40.9	54.0	13.1	Pass
7326	Peak	Horz	48.8	37.9	9.6	0.0	35.9	60.4	74.0	13.6	Pass
7326	Avg	Horz	28.8	37.9	9.6	0.0	35.9	40.4	54.0	13.6	Pass
High channel (2482MHz)											
2485.5	Peak	Horz	57.9	30.6	5.4	0.0	36.2	57.7	74.0	16.3	Pass
2485.5	Avg	Horz	45.3	30.6	5.4	0.0	36.2	45.1	54.0	8.9	Pass
2485.5	Peak	Vert	58.5	30.6	5.4	0.0	36.2	58.3	74.0	15.7	Pass
2485.5	Avg	Vert	45.6	30.6	5.4	0.0	36.2	45.4	54.0	8.6	Pass
2483.5	Peak	Horz	48.8	30.6	5.4	0.0	36.2	48.6	74.0	25.4	Pass (Bandedge)
2483.5	Avg	Horz	47.7	30.6	5.4	0.0	36.2	47.5	54.0	6.5	Pass (Bandedge)
2483.5	Peak	Vert	48.8	30.6	5.4	0.0	36.2	48.6	74.0	25.4	Pass (Bandedge)
2483.5	Avg	Vert	46.9	30.6	5.4	0.0	36.2	46.7	54.0	7.3	Pass (Bandedge)
2482	Peak	Horz	85.5	30.6	5.4	0.0	36.2	85.3	114.0	28.7	Pass
2482	Avg	Horz	65.5	30.6	5.4	0.0	36.2	65.3	94.0	28.7	Pass
2482	Peak	Vert	90.9	30.6	5.4	0.0	36.2	90.7	114.0	23.3	Pass
2482	Avg	Vert	70.9	30.6	5.4	0.0	36.2	70.7	94.0	23.3	Pass
4964	Peak	Horz	61.3	33.7	7.7	0.0	35.7	67.0	74.0	7.0	Pass
4964	Avg	Horz	41.3	33.7	7.7	0.0	35.7	47.0	54.0	7.0	Pass
4964	Peak	Vert	61.6	33.7	7.7	0.0	35.7	67.3	74.0	6.7	Pass
4964	Avg	Vert	41.6	33.7	7.7	0.0	35.7	47.3	54.0	6.7	Pass
7446	Peak	Vert	49.1	37.9	9.6	0.0	35.9	60.7	74.0	13.3	Pass
7446	Avg	Vert	29.1	37.9	9.6	0.0	35.9	40.7	54.0	13.3	Pass
7446	Peak	Horz	49.0	37.9	9.6	0.0	35.9	60.6	74.0	13.4	Pass
7446	Avg	Horz	29.0	37.9	9.6	0.0	35.9	40.6	54.0	13.4	Pass

Notes:

The measurement shown at 2398MHz is the worst case measurement between 2310 and 2400MHz.


The measurement shown at 2485.5MHz is the worst case measurement between 2483.5 and 2500MHz.

Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	


Test Equipment List

Equipment	Model No.	Manufacturer	Last calibration date	Next calibration due date	Asset #
Spectrum Analyzer	8566B	HP	Dec 21, 2011	Dec 21, 2013	GEMC 141
Quasi-Peak Adapter	85650A	HP	Dec 21, 2011	Dec 21 2013	GEMC 7
BiLog Antenna	3142-C	ETS	Aug 28, 2012	Aug 28, 2014	GEMC 8
Loop Antenna 30Hz – 1MHz	EM 6871	Electro-Metrics	Feb 05, 2013	Feb 05, 2015	GEMC 70
Loop Antenna 100kHz – 30MHz	EM 6872	Electro-Metrics	Feb 05, 2013	Feb 05, 2015	GEMC 71
Q-Par Horn 1.5GHz -18 GHz	6878/24	Q-par	Aug 23, 2012	Aug 23, 2014	GEMC 6365
Horn Antenna 18 GHz - 26.5 GHz	SAS-572	A.H. Systems	Aug 27, 2012	Aug 27, 2014	GEMC 6371
18.0-26.5 GHz Harmonic Mixer	11970K	HP	Dec 21, 2011	Dec 21 2013	GEMC 158
Chase Preamp 9kHz - 2 GHz	CPA9231A	Chase	Aug 29, 2012	Aug 29, 2014	GEMC 6403
Pre-amp 1-26GHz	HP 8449B	HP	Aug 22, 2012	Aug 22, 2014	GEMC 6351
RF Cable 7m	LMR-400-7M-50OHM-MN-MN	LexTec	NCR	NCR	GEMC 28
RF Cable 1m	LMR-400-1M-50OHM-MN-MN	LexTec	NCR	NCR	GEMC 29
RF Cable 0.5M	LMR-400-0.5M-50OHM-MN-MN	LexTec	NCR	NCR	GEMC 31

This report module is based on GEMC template "FCC - 15.209 - Radiated Emissions_Rev1.doc"

Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	


Appendix A – Client Provided Details

Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	


General EUT Description

Client Details	
Organization / Address	Rehabtronics Inc. #4352, 10230 Jasper Avenue Edmonton, AB Canada T5J 4P6
EUT (Equipment Under Test) Details	
EUT Name (for report title)	Intelli-Connect
EUT Model / SN (if known)	ICT-1000
EUT is powered using	Internal Lithium-Ion Battery (Normal Operation), AC/DC Power Supply Adaptor (Charging only)
Input voltage range(s) (V)	Input voltage range of the wall adaptor is 110-240V. Charge Cradle accepts voltages in the range of 4.5 Volts to 6 V DC
Frequency range(s) (Hz)	DC
Rated input current (A)	IC-Earpiece draws maximum of 50 mA from the wall adaptor when it is placed into the charge-cradle and it is charging.
Number of power supplies in EUT	1
Transmits RF energy? (describe)	Yes with a operating frequency band of 2401-2482MHz
Basic EUT functionality description	The Intelli-Connect system is a remote-triggering device for the H200W stimulator system. The Earpiece hangs over the ear and detects tooth-clicks. Upon detecting tooth-clicks it sends trigger commands to the H200W Orthosis, triggering stimulation.
Modes of operation	Charge-Mode & Normal-Operation.
EUT response time (ms)	1-5 seconds
Frequency of all clocks present in EUT	4kHz, 384kHz, 6.25MHz, 25Mhz, 26MHz
I/O cable description Specify length and type	W-Cable (~30cm).
Available connectors on EUT	Charging mains input connector
Peripherals required to exercise EUT Ex. Signal generator	-H200W control unit (Charge-Cradle) -AC/DC Power Supply Adaptor
Dimensions of product	(Earpiece Dimensions) L 47mm W 75mm H 10mm

For further details for filing purposes, refer to filing package.


Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	

Appendix B – EUT & Test Setup Photos

Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	




EUT with AC/DC Power supply adaptor

Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	




EUT – Photo 1

Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	




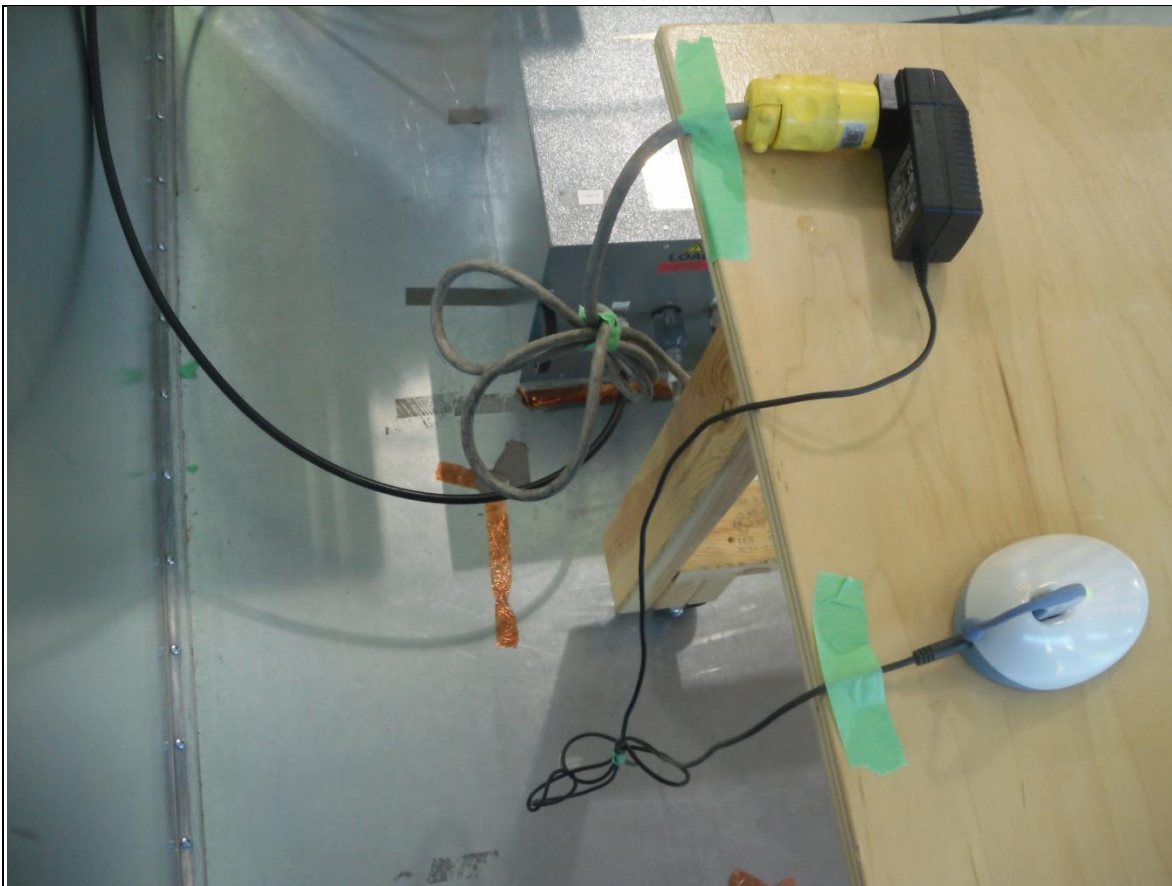
EUT – Photo 2

Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	



Power Line Conducted Emissions Test Set up _ Photo 1

Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	




Power Line Conducted Emissions Test Set up _ Photo 2

Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	



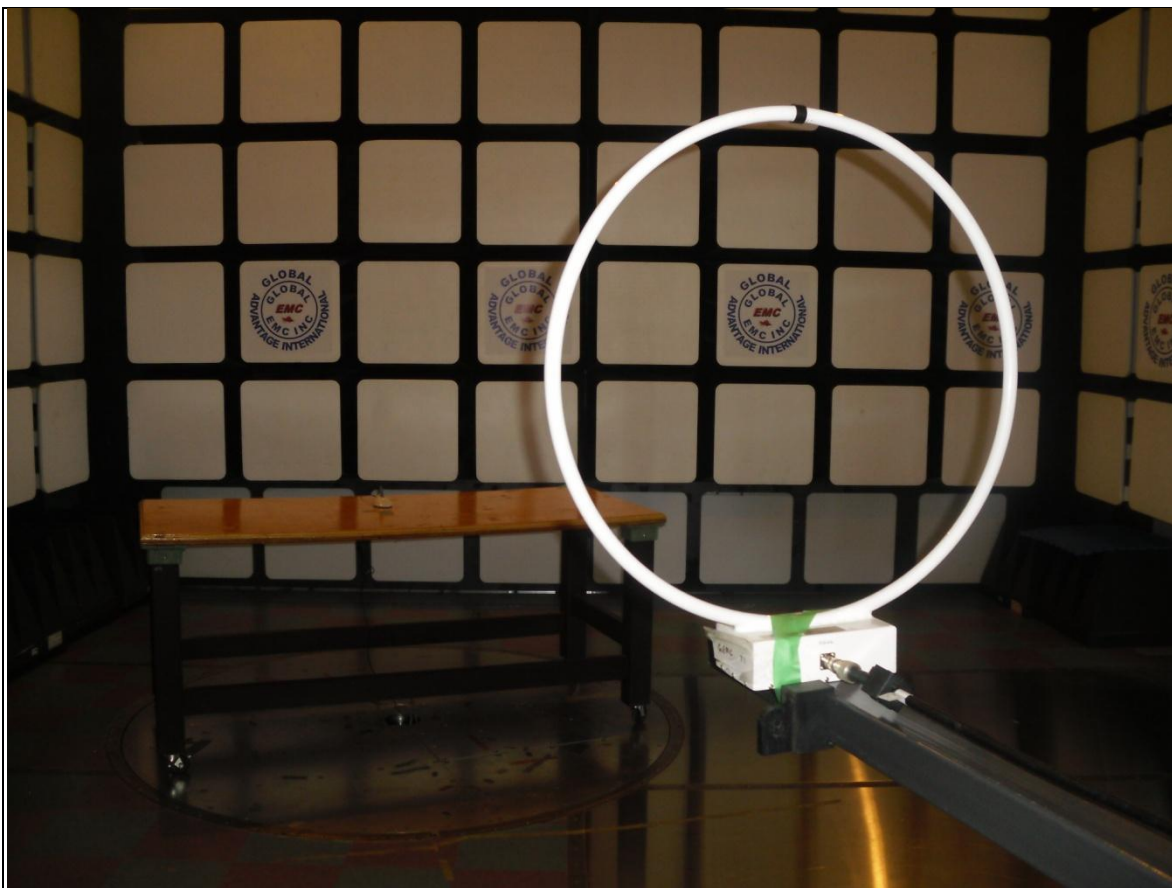
Radiated Emissions Test Set up _ Photo 1

Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	



Radiated Emissions Test Set up _ Photo 2

Client	Rehabtronics Inc.	
Product	Intelli-Connect	
Standard(s)	RSS 210 Issue 8:2010 / FCC Part 15 Subpart C:2012	



Radiated Emissions Test Set up _ Photo 3