

## TEST REPORT

**Report Number: 102019500MPK-004**

**Project Number: G102019500**

**March 20, 2015**

**Testing performed on the InReach Explorer**

**Model Number:**

**INRCH25**

**To**

**EN 55022: 2010**

**AS/NZS CISPR22: 2009/A1:2010**

**FCC Part 15, Subpart B**

**Industry Canada ICES-003**

**VCCI V-3/2013-04**

**Class: B**

**For**

**DeLorme Publishing Co., Inc.**

Test Performed by:

Intertek  
1365 Adams Court  
Menlo Park, CA 94025 USA

Test Authorized by:

DeLorme Publishing Co., Inc.  
2 Delorme Dr.  
PO Box 298  
Yarmouth, ME 04096 USA

Prepared by:

  
Anderson Soungpanya

**Date:** March 20, 2015

Reviewed by:

  
Krishna K Vemuri

**Date:** March 20, 2015

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## VERIFICATION OF COMPLIANCE

### Report No. 102019500MPK-004

Verification is hereby issued to the named APPLICANT and is VALID ONLY for the Equipment identified hereon for use under the rules and regulations listed below.

|                               |                                                                                                                         |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>Equipment Under Test:</b>  | InReach Explorer                                                                                                        |
| <b>Model Number:</b>          | INRCH25                                                                                                                 |
| <b>Serial Number:</b>         | EMC 1                                                                                                                   |
| <b>Applicant:</b>             | DeLorme Publishing Co., Inc.                                                                                            |
| <b>Contact:</b>               | Jon McPherson                                                                                                           |
| <b>Address:</b>               | 2 Delorme Dr.<br>PO Box 298<br>Yarmouth, ME 04096                                                                       |
| <b>Country</b>                | USA                                                                                                                     |
| <b>Tel. number:</b>           | (207) 846-7149                                                                                                          |
| <b>Email:</b>                 | jonathan.mcpherson@delorme.com                                                                                          |
| <b>Applicable Regulation:</b> | EN 55022: 2010<br>AS/NZS CISPR22: 2009/A1:2010<br>FCC Part 15 Subpart B<br>Industry Canada ICES-003<br>VCCI V-3/2013-04 |
| <b>Equipment Class:</b>       | Class B                                                                                                                 |
| <b>Date of Test:</b>          | February 26, 2015 & March 02, 2015                                                                                      |

*We attest to the accuracy of this report:*



Anderson Soungpanya  
Project Engineer



Krishna K Vemuri  
EMC Senior Staff Engineer

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## EXECUTIVE SUMMARY – EMISSIONS

| Test Description                                                                                                                                                            | Class | Pass/Fail Comments          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------------------------|
| <b>Radiated Emissions</b>                                                                                                                                                   |       |                             |
| <ul style="list-style-type: none"> <li>• EN 55022</li> <li>• AS/NZS CISPR22,</li> <li>• FCC Part 15 Subpart B</li> <li>• ICES-003</li> <li>• VCCI –V-3 / 2013.04</li> </ul> | B     | Complies                    |
| <b>Conducted Emissions (AC Mains)</b>                                                                                                                                       |       |                             |
| <ul style="list-style-type: none"> <li>• EN 55022</li> <li>• AS/NZS CISPR22,</li> <li>• FCC Part 15 Subpart B</li> <li>• ICES-003</li> <li>• VCCI –V-3 / 2013.04</li> </ul> | B     | Complies                    |
| <b>Conducted Emissions (Telecommunication Ports)</b>                                                                                                                        |       |                             |
| <ul style="list-style-type: none"> <li>• EN 55022</li> <li>• AS/NZS CISPR22,</li> <li>• VCCI –V-3 / 2013.04</li> </ul>                                                      | B     | Not Applicable <sup>1</sup> |

<sup>1</sup>The EUT does not contain any Telecommunications cables.

## 1.0 Job Description

### 1.1 Client Information

The EUT has been tested at the request of:

|                         |                                                                                          |
|-------------------------|------------------------------------------------------------------------------------------|
| <b>Company:</b>         | DeLorme Publishing Co., Inc.<br>2 Delorme Dr.<br>PO Box 298<br>Yarmouth, ME 04096<br>USA |
| <b>Name of contact:</b> | Jon McPherson                                                                            |
| <b>Telephone:</b>       | (207) 846-7149                                                                           |
| <b>Email:</b>           | jonathan.mcperson@delorme.com                                                            |

### 1.2 Test Plan Reference

Tests were performed to the following standards:

- EN 55022: 2010
- AS/NZS CISPR22: 2009/A1:2010
- FCC Part 15 Subpart B
- Industry Canada ICES-003
- VCCI V-3/2013-04

### 1.3 Equipment Under Test (EUT)

| Ref No.<br>(Slot) | Description                                 | Model Number | Serial Number |
|-------------------|---------------------------------------------|--------------|---------------|
| 1                 | Hand-held two-way<br>satellite communicator | INRCH25      | EMC 1         |

**EUT receive date:** February 24, 2015

**EUT receive condition:** The EUT was received in fair condition with no apparent damage to chassis.

**Test start date:** February 26, 2015

**Test completion date:** March 02, 2015

The test results in this report pertain only to the item tested.

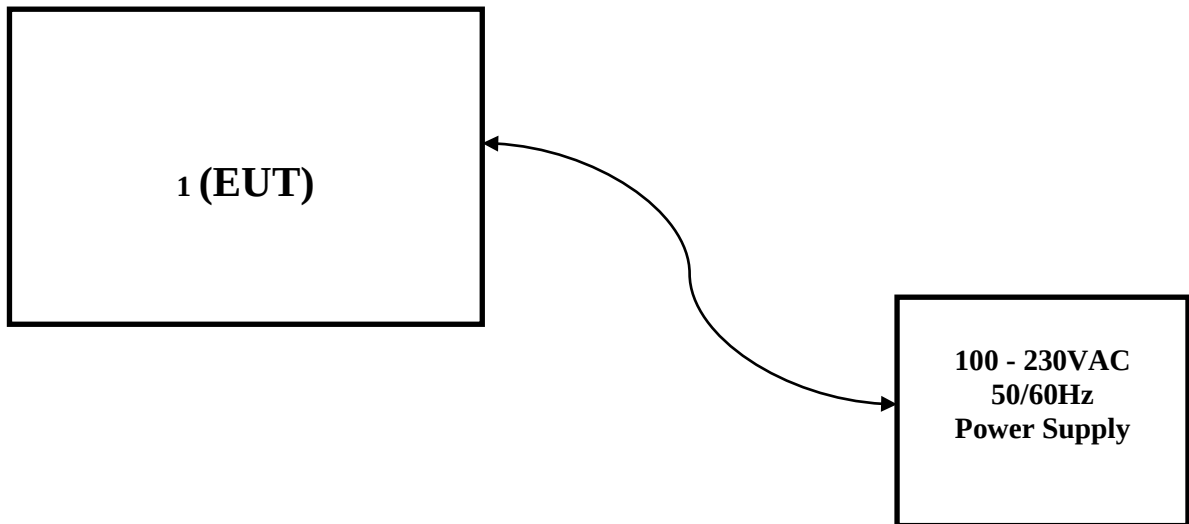
DeLorme Publishing Co., Inc. supplied the following description of the INRCH25:

The InReach Explorer is a hand-held two-way satellite communicator with embedded GPS positioning and Bluetooth.

#### 1.4 System Support Equipment and Block diagram

| Description             | Manufacturer                            | Model Numbers  |
|-------------------------|-----------------------------------------|----------------|
| AC/DC USB Power Adapter | Shenzhen Honmingyuan Electronic CO.,LTD | GDP06A-0501000 |

#### 1.5 System Block Diagram





## 1.6 Justification

The EUT was configured for testing in a typical configuration, as specified by DeLorme Publishing Co., Inc. The highest clock frequency used in the EUT is 208 MHz; Radiated Emissions was tested up to 2 GHz.

The EUT tested in this report is the model number: INRCH25. It's product name is inReach Explorer. It is a representative sample of model number: INRCH20, product name: inReach SE.

The INRCH25 utilizes magnetic, acceleration, and barometric pressure sensors while the INRCH20 does not. Both models physically have the sensors; the INRCH20 simply doesn't use them (disabled in firmware). The INRCH20 is just a feature subset of the INRCH25.

## 1.7 Mode(s) of operation

For Radiated Emissions the EUT was tested in 2 modes, battery mode and charge mode. During both modes, the EUT was continuously receiving. The EUT was tested in only charge mode for Conducted Emissions.

## 1.8 Modifications required for compliance

No modifications were made during compliance testing in order to bring the product into compliance.



## 2.0 Test Environment for Emissions Testing

### 2.1 Test Facility

The test facility is located at 1365 Adams Court, Menlo Park, California. The test site is a 10-meter semi-anechoic chamber. The site meets the characteristics of CISPR 16-1 and ANSI C63.4. For measurements, a remotely controlled flush-mount metal-top turntable is used to rotate the EUT a full 360 degrees. A remote controlled non-conductive antenna mast is used to scan the antenna height from one to four meters.

The A2LA certificate number for this site is 1755-01.

The Industry Canada (IC) Site Number is 2042L-1.

The VCCI Site Number is A-0141

### 2.2 Test Equipment

**Table 4-1** contains a list of the test equipment used during the testing.

**Table 4-1 List of Test Equipment**

| Equipment               | Manufacturer      | Model/Type           | Asset #   | Cal Int | Cal Due  |
|-------------------------|-------------------|----------------------|-----------|---------|----------|
| EMI Receiver            | Rohde and Schwarz | ESU                  | ITS 00961 | 12      | 11/10/15 |
| BI-Log Antenna          | Antenna Research  | LPB-2513/A           | ITS 00355 | 12      | 08/21/15 |
| Pre-Amplifier           | Sonoma Instrument | 310N                 | ITS 00942 | 12      | 11/26/15 |
| LISN                    | FCC               | FCC-LISN-50-50-M-H   | ITS 00552 | 12      | 09/04/15 |
| Horn Antenna            | ETS Lindgren      | 3115                 | ITS 00982 | 12      | 11/21/15 |
| Pre-Amplifier (1-18GHz) | Miteq             | AMF-4D-001180-24-10P | ITS 00526 | 12      | 10/01/15 |
| Digital Barometer       | Newport           | IBTHX-W/N            | ITS 00980 | 12      | 09/29/15 |
| Hygro Thermometer       | Control Co.       | 4085                 | ITS 00321 | 12      | 10/27/15 |

\* Calibration performed by ITS prior to the test. # Calibration not required

## 2.3 Example Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor. Then by subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - PA$$

Where:

FS = Field Strength in dB ( $\mu\text{V}/\text{m}$ )

RA = Receiver Amplitude (including preamplifier) in dB ( $\mu\text{V}$ )

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB (1/m)

PA = Preamplifier Factor in dB

Assume a receiver reading of 52.0 dB ( $\mu\text{V}$ ) is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving field strength of 32 dB ( $\mu\text{V}/\text{m}$ ).

$$RA = 52.0 \text{ dB } (\mu\text{V})$$

$$AF = 7.4 \text{ dB } (1/\text{m})$$

$$CF = 1.6 \text{ dB}$$

$$PA = 29.0 \text{ dB}$$

$$FS = RA + AF + CF - PA$$

$$FS = 52.0 + 7.4 + 1.6 - 29.0$$

$$FS = 32 \text{ dB } (\mu\text{V}/\text{m})$$

## 2.4 Measurement Uncertainty

Compliance of the product is based on the measured value. However, the measurement uncertainty is included for informational purposes.

### **Radiated Emission:**

The uncertainty in the measured field strength is estimated as follows, for a minimum confidence probability of 95 %

| Freq. Range        | Detection Mode | Uncertainty  |
|--------------------|----------------|--------------|
| 30 MHz to 1000 MHz | Quasi-peak     | $\pm 4.2$ dB |
| 1 GHz to 18 GHz    | Average/Peak   | $\pm 6.0$ dB |

### **Conducted Emission:**

The uncertainty in the measured voltage is estimated as follows, for a minimum confidence probability of 95 %

| Freq. Range       | Detection Mode | Uncertainty  |
|-------------------|----------------|--------------|
| 150 kHz to 30 MHz | Average        | $\pm 2.4$ dB |
|                   | Quasi-peak     | $\pm 2.6$ dB |

### 3.0 Emissions Test Results

#### 3.1 Electromagnetic Radiated Disturbance

##### 3.1.1 Test Limits

**Table 5-1a Limits for Electromagnetic Radiated Disturbance, EN 55022, AS/NZS CISPR 22, VCCI, ICES-003**

| Frequency (MHz) | Class A at 10m dB(μV/m) | Class B at 10m dB(μV/m) |
|-----------------|-------------------------|-------------------------|
| 30-230          | 40                      | 30.0                    |
| 230-1000        | 47                      | 37.0                    |

*Note: The lower limit shall apply at the transition frequency.*

**Table 5-1b Class A Limits for Electromagnetic Radiated Disturbance, EN 55022, AS/NZS CISPR22, VCCI, ICES-003 at a Measurement distance of 3 m**

| Frequency (MHz) | Average Limit dB(μV/m) | Peak Limit dB(μV/m) |
|-----------------|------------------------|---------------------|
| 1000-3000       | 56                     | 76                  |
| 3000-6000       | 60                     | 80                  |

*Note: The lower limit shall apply at the transition frequency.*

**Table 5-1c Class B Limits for Electromagnetic Radiated Disturbance, EN 55022, AS/NZS CISPR22, VCCI, ICES-003 at a Measurement distance of 3 m**

| Frequency (MHz) | Average Limit dB(μV/m) | Peak Limit dB(μV/m) |
|-----------------|------------------------|---------------------|
| 1000-3000       | 50                     | 70                  |
| 3000-6000       | 54                     | 74                  |

*Note: The lower limit shall apply at the transition frequency.*

**Table 5-1d Limits for Electromagnetic Radiated Disturbance, FCC Section 15.109(b)**

| Frequency<br>(MHz) | Class A at 10m<br>dB(μV/m) | Class B at 3m<br>dB(μV/m) |
|--------------------|----------------------------|---------------------------|
| 30-88              | 39.0                       | 40.0                      |
| 88-216             | 43.5                       | 43.5                      |
| 216-960            | 46.4                       | 46.0                      |
| Above 960          | 49.5                       | 54.0                      |

*Note: Three sets of units are commonly used for EMI measurement, decibels below one milliwatt (-dBm), decibels above a microvolt (dBμV), and microvolts (μV). To convert between them, use the following formulas:  $20 \text{ LOG}_{10}(\mu\text{V}) = \text{dB}\mu\text{V}$ ,  $\text{dBm} = \text{dB}\mu\text{V} - 107$*

Alternative limits per Section 15.109(g):

**Table 5-1e Radiated Emissions Limits, CISPR 22**

| Frequency<br>(MHz) | Class A at 10m<br>dB(μV/m) | Class B at 10m<br>dB(μV/m) |
|--------------------|----------------------------|----------------------------|
| 30-230             | 40                         | 30.0                       |
| 230-1000           | 47                         | 37.0                       |

*Note: The lower limit shall apply at the transition frequency.*



### 3.1.2 Test Procedure

Measurements are conducted with a quasi-peak detector instrument in the frequency range of 30 MHz to 1000 MHz and with the average detector instrument in the frequency range above 1000 MHz. The measuring receiver meets the requirements of Section One of CISPR 16 and the measuring antenna correlates to a balanced dipole.

Measurements of the radiated field are made with the antenna located at a distance of 10 meters from the EUT. If the field-strength measurements at 10m cannot be made because of high ambient noise level or for other reasons, measurements may be made at a closer distance, for example 3m. An appropriate distance correction factor should be used to normalize the measured data to the specified distance for determining compliance.

The antenna is adjusted between 1m and 4m in height above the ground plane for maximum meter reading at each test frequency.

The antenna-to-EUT azimuth is varied during the measurement to find the maximum field-strength readings.

The antenna-to-EUT polarization (horizontal and vertical) is varied during the measurements to find the maximum field-strength readings.

The EUT, where intended for tabletop use, is placed on a table whose top is 0.8m above the ground plane. The table is constructed of non-conductive materials. Its dimensions are 1m by 1.5m, but may be extended for a larger EUT.

Floor standing EUTs are placed on a horizontal metal ground plane and isolated from the ground plane by an insulating material up to 12mm thick.

Equipment setup for radiated disturbance tests followed the guidelines of ANSI C63.4 and EN 55022.

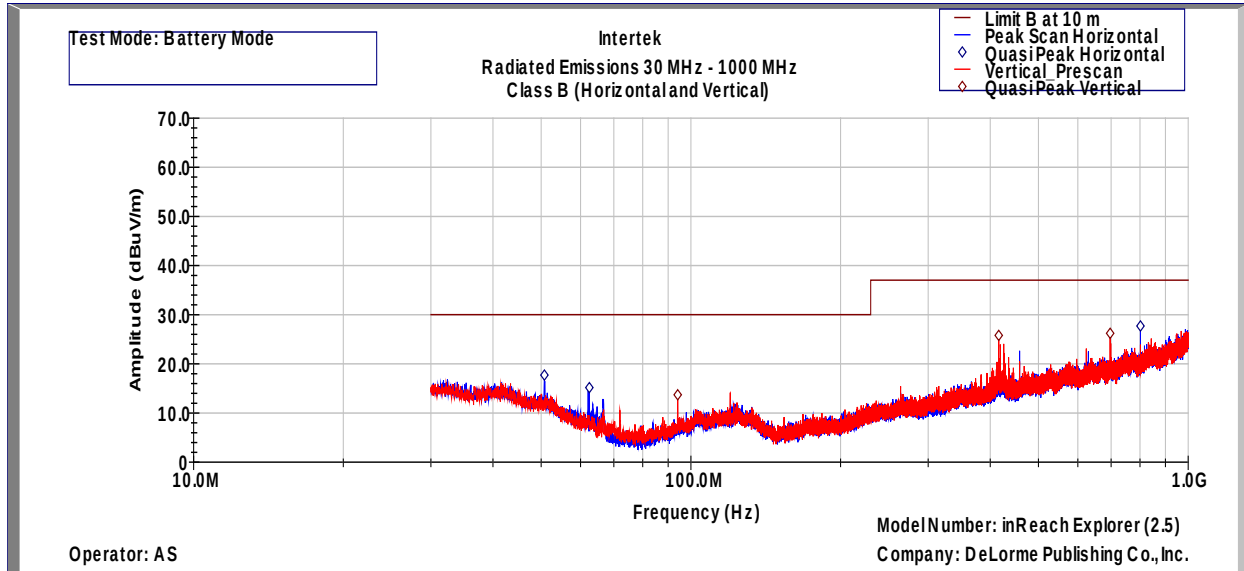
|                   |                    |
|-------------------|--------------------|
| <b>Tested By:</b> | Anderson Soungpaya |
| <b>Test Date:</b> | February 26, 2015  |

22.4°C, 45.9% RH, 30.5 Hg in

## 3.1.3 Test Results

### FCC Part 15 Subpart B, EN 55022, AS/NZS CISPR 22, VCCI & ICES-003 30 MHz to 1000 MHz

#### Battery Mode



Intertek Testing Services

Radiated Emissions 30 MHz - 1000 MHz

Operator: AS

Model Number: INRCH25

Company: DeLorme Publishing Co., Inc.

#### CISPR Class B (QP-Vertical)

| Frequency<br>MHz | Quasi Pk FS<br>dB(uV/m) | Limit@10m<br>dB(uV/m) | Margin<br>dB | RA<br>dB(uV) | AG<br>dB | AF<br>dB(1/m) | CF<br>dB | Azimuth<br>deg | Height<br>cm |
|------------------|-------------------------|-----------------------|--------------|--------------|----------|---------------|----------|----------------|--------------|
| 94.080           | 13.7                    | 30                    | -16.3        | 35.4         | 32.1     | 9.2           | 1.2      | 72             | 100          |
| 415.990          | 25.8                    | 37                    | -11.2        | 39.2         | 32.0     | 16.4          | 2.2      | 129            | 100          |
| 696.850          | 26.2                    | 37                    | -10.8        | 35.7         | 32.3     | 19.8          | 3.0      | 48             | 102          |

#### CISPR Class B (QP-Horizontal)

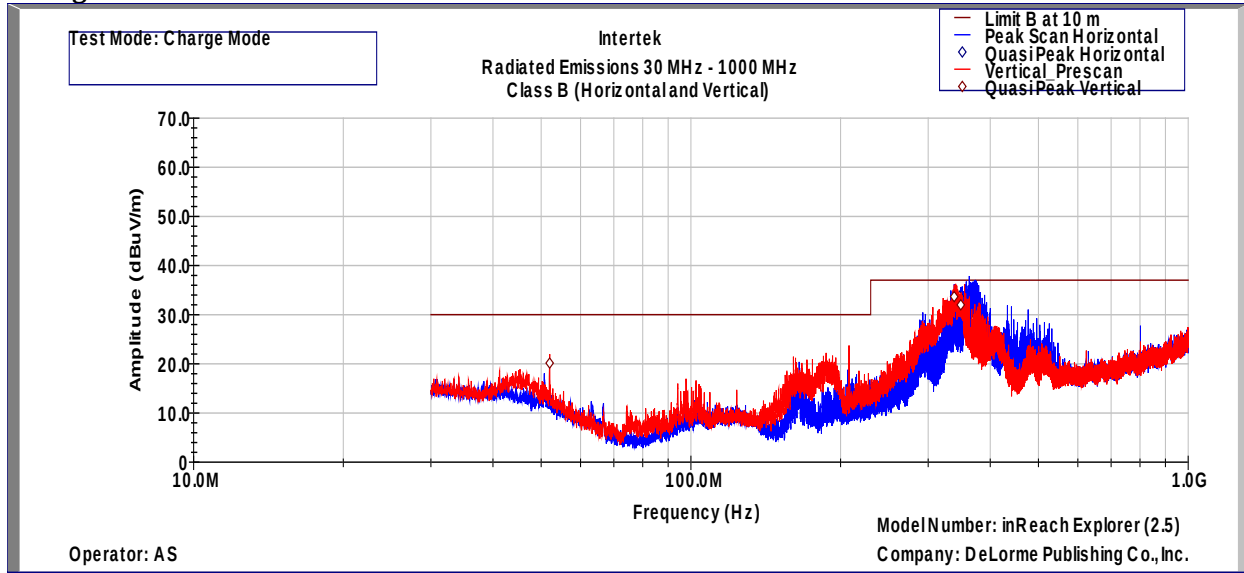
| Frequency<br>MHz | Quasi Pk FS<br>dB(uV/m) | Limit@10m<br>dB(uV/m) | Margin<br>dB | RA<br>dB(uV) | AG<br>dB | AF<br>dB(1/m) | CF<br>dB | Azimuth<br>deg | Height<br>cm |
|------------------|-------------------------|-----------------------|--------------|--------------|----------|---------------|----------|----------------|--------------|
| 50.750           | 17.7                    | 30                    | -12.3        | 34.2         | 32.1     | 14.8          | 0.8      | 237            | 102          |
| 62.500           | 15.1                    | 30                    | -14.9        | 36.6         | 32.1     | 9.7           | 0.9      | 147            | 129          |
| 801.900          | 27.7                    | 37                    | -9.3         | 36.4         | 32.1     | 20.1          | 3.3      | 234            | 231          |

Test Mode: Battery Mode

## 3.1.3 Test Results (Continued)

### FCC Part 15 Subpart B, EN 55022, AS/NZS CISPR 22, VCCI & ICES-003 30 MHz to 1000 MHz

#### Charge Mode at 120VAC 60Hz



Intertek Testing Services

Radiated Emissions 30 MHz - 1000 MHz

Operator: AS

Model Number: INRCH25

Company: DeLorme Publishing Co., Inc.

#### CISPR Class B (QP-Vertical)

| Frequency | Quasi Pk FS | Limit@10m | Margin | RA     | AG   | AF      | CF  | Azimuth | Height |
|-----------|-------------|-----------|--------|--------|------|---------|-----|---------|--------|
| MHz       | dB(uV/m)    | dB(uV/m)  | dB     | dB(uV) | dB   | dB(1/m) | dB  | deg     | cm     |
| 52.000    | 20.1        | 30        | -9.9   | 37.2   | 32.1 | 14.2    | 0.8 | 218     | 100    |
| 338.480   | 33.7        | 37        | -3.3   | 49.6   | 32.0 | 14.1    | 1.9 | 193     | 100    |
| 348.920   | 32.0        | 37        | -5.0   | 47.2   | 32.0 | 14.8    | 2.0 | 188     | 100    |

#### CISPR Class B (QP-Horizontal)

| Frequency | Quasi Pk FS | Limit@10m | Margin | RA     | AG   | AF      | CF  | Azimuth | Height |
|-----------|-------------|-----------|--------|--------|------|---------|-----|---------|--------|
| MHz       | dB(uV/m)    | dB(uV/m)  | dB     | dB(uV) | dB   | dB(1/m) | dB  | deg     | cm     |
| 336.800   | 32.4        | 37        | -4.6   | 48.4   | 32.0 | 14.1    | 1.9 | 170     | 230    |
| 346.200   | 31.8        | 37        | -5.2   | 47.2   | 32.0 | 14.6    | 1.9 | 173     | 219    |
| 347.040   | 33.7        | 37        | -3.3   | 49.1   | 32.0 | 14.7    | 2.0 | 164     | 200    |
| 372.600   | 29.2        | 37        | -7.8   | 44.1   | 32.0 | 15.1    | 2.0 | 254     | 261    |

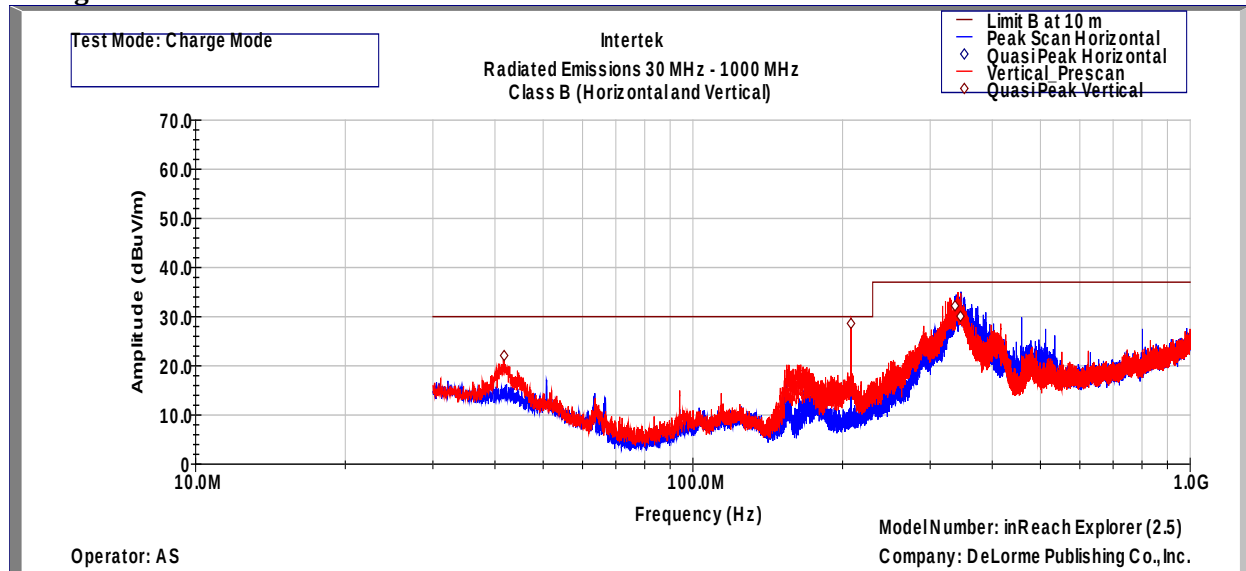
Test Mode: Charge Mode at 120VAC 60Hz



## 3.1.3 Test Results (Continued)

### FCC Part 15 Subpart B, EN 55022, AS/NZS CISPR 22, VCCI & ICES-003 30 MHz to 1000 MHz

#### Charge Mode at 230VAC 50Hz



Intertek Testing Services

Radiated Emissions 30 MHz - 1000 MHz

Operator: AS

Model Number: INRCH25

Company: DeLorme Publishing Co., Inc.

#### CISPR Class B (QP-Vertical)

| Frequency | Quasi Pk FS | Limit@10m | Margin | RA     | AG   | AF      | CF  | Azimuth | Height |
|-----------|-------------|-----------|--------|--------|------|---------|-----|---------|--------|
| MHz       | dB(uV/m)    | dB(uV/m)  | dB     | dB(uV) | dB   | dB(1/m) | dB  | deg     | cm     |
| 41.737    | 22.1        | 30        | -7.9   | 36.4   | 32.1 | 17.0    | 0.7 | 213     | 100    |
| 208.000   | 28.6        | 30        | -1.4   | 49     | 32.0 | 10.3    | 1.3 | 145     | 100    |
| 336.630   | 32.2        | 37        | -4.8   | 48.2   | 32.0 | 14.1    | 1.9 | 231     | 100    |
| 345.221   | 30.1        | 37        | -6.9   | 45.6   | 32.0 | 14.5    | 1.9 | 134     | 100    |

#### CISPR Class B (QP-Horizontal)

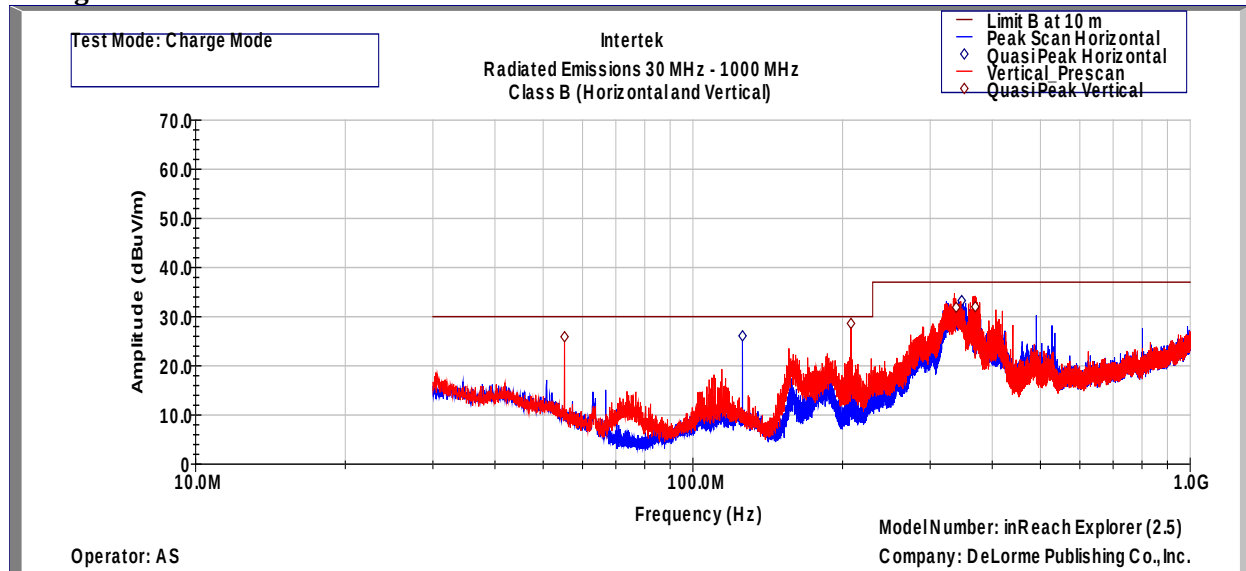
| Frequency | Quasi Pk FS | Limit@10m | Margin | RA     | AG   | AF      | CF  | Azimuth | Height |
|-----------|-------------|-----------|--------|--------|------|---------|-----|---------|--------|
| MHz       | dB(uV/m)    | dB(uV/m)  | dB     | dB(uV) | dB   | dB(1/m) | dB  | deg     | cm     |
| 333.800   | 31.0        | 37        | -6.0   | 47.2   | 32.0 | 13.9    | 1.9 | 234     | 223    |
| 345.120   | 31.4        | 37        | -5.6   | 46.9   | 32.0 | 14.5    | 1.9 | 156     | 232    |
| 350.622   | 29.3        | 37        | -7.7   | 44.4   | 32.0 | 14.9    | 2.0 | 211     | 206    |

Test Mode: Charge Mode at 230VAC 50Hz

## 3.1.3 Test Results (Continued)

### FCC Part 15 Subpart B, EN 55022, AS/NZS CISPR 22, VCCI & ICES-003 30 MHz to 1000 MHz

#### Charge Mode at 100VAC 50Hz



Intertek Testing Services  
Radiated Emissions 30 MHz - 1000 MHz  
Operator: AS

Model Number: INRCH25  
Company: DeLorme Publishing Co., Inc.

#### CISPR Class B (QP-Vertical)

| Frequency | Quasi Pk FS | Limit@10m | Margin | RA     | AG   | AF      | CF  | Azimuth | Height |
|-----------|-------------|-----------|--------|--------|------|---------|-----|---------|--------|
| MHz       | dB(uV/m)    | dB(uV/m)  | dB     | dB(uV) | dB   | dB(1/m) | dB  | deg     | cm     |
| 55.200    | 25.9        | 30        | -4.1   | 44.2   | 32.1 | 12.9    | 0.9 | 45      | 100    |
| 208.000   | 28.6        | 30        | -1.4   | 49.0   | 32.0 | 10.3    | 1.3 | 145     | 100    |
| 338.500   | 31.9        | 37        | -5.1   | 47.8   | 32.0 | 14.1    | 1.9 | 232     | 112    |
| 369.731   | 32.0        | 37        | -5.0   | 46.9   | 32.0 | 15.1    | 2.0 | 256     | 106    |

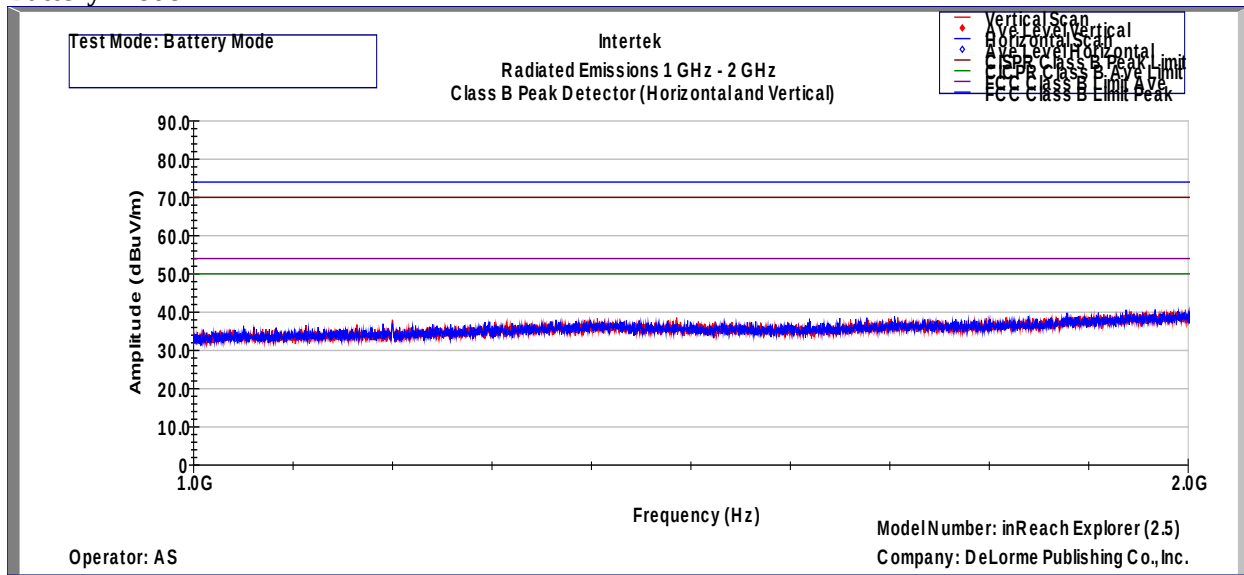
#### CISPR Class B (QP-Horizontal)

| Frequency | Quasi Pk FS | Limit@10m | Margin | RA     | AG   | AF      | CF  | Azimuth | Height |
|-----------|-------------|-----------|--------|--------|------|---------|-----|---------|--------|
| MHz       | dB(uV/m)    | dB(uV/m)  | dB     | dB(uV) | dB   | dB(1/m) | dB  | deg     | cm     |
| 125.840   | 26.1        | 30        | -3.9   | 45.2   | 32.0 | 11.7    | 1.2 | 211     | 255    |
| 347.350   | 33.3        | 37        | -3.7   | 48.6   | 32.0 | 14.7    | 2.0 | 231     | 219    |

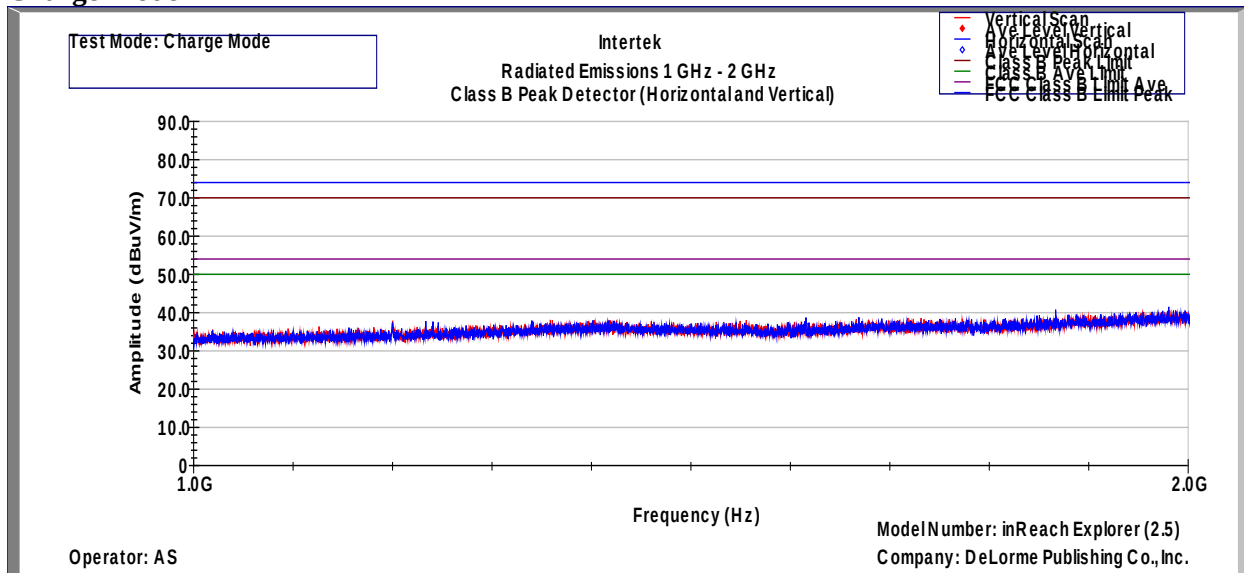
Test Mode: Charge Mode at 100VAC 50Hz

## FCC Part 15 Subpart B, EN 55022, AS/NZS CISPR 22, VCCI & ICES-003 1000 MHz to 2000 MHz

### Battery Mode



### Charge Mode



Note: Radiated Emissions was carried out on 100V 50Hz, 120V 60Hz and 230V 50Hz. No variance was found while investigating the different voltages above 1 GHz, and worst case data is reported.

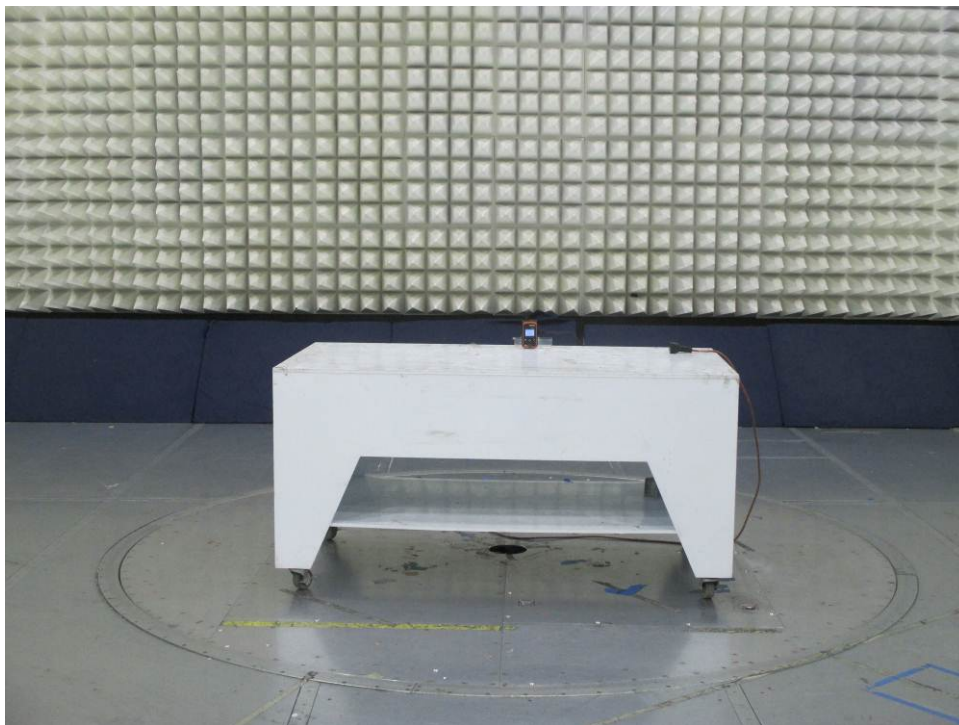
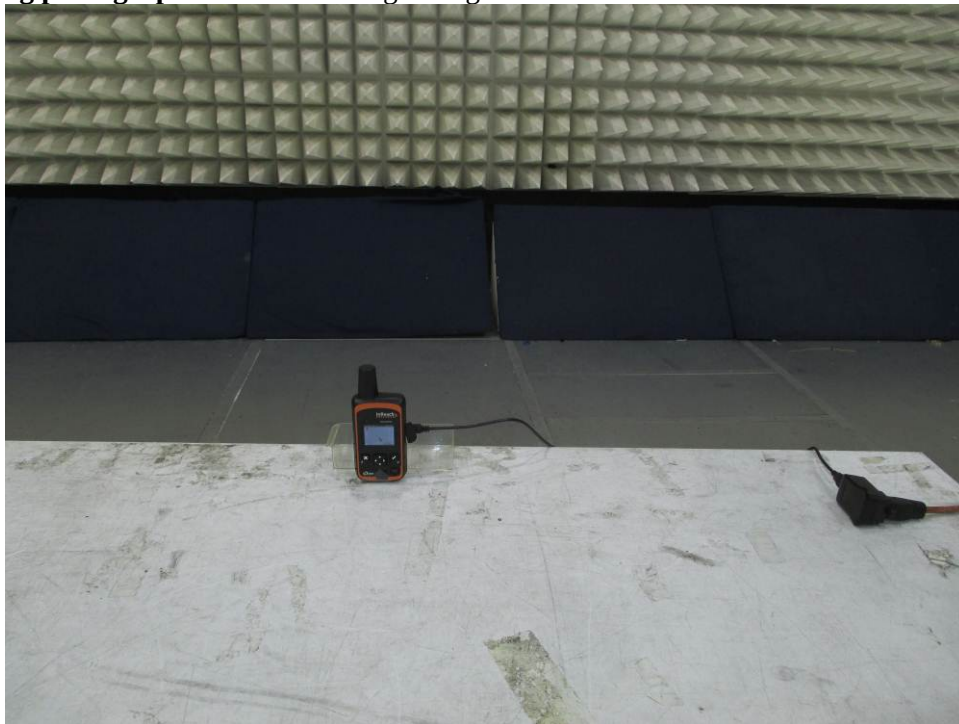
**Results:**

- Complies by** 9.3 dB for Battery mode
- Complies by** 3.3 dB for Charge Mode at 120V 60Hz\*
- Complies by** 1.4 dB for Charge Mode at 230V 50Hz\*
- Complies by** 1.4 dB for Charge Mode at 100V 50Hz\*

\*Note: Measured result is below the specification limit by a margin less than the measurement uncertainty; it is not therefore possible to determine compliance at a level of confidence of 95%. However, the measured result indicates a higher probability that the product tested complies with the specification limit.

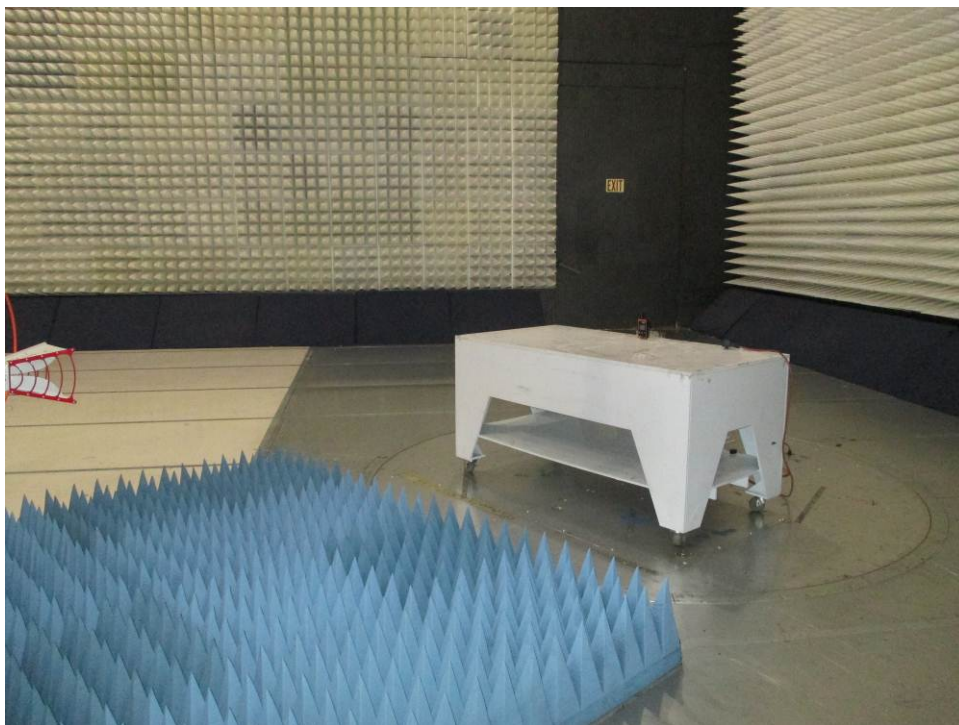
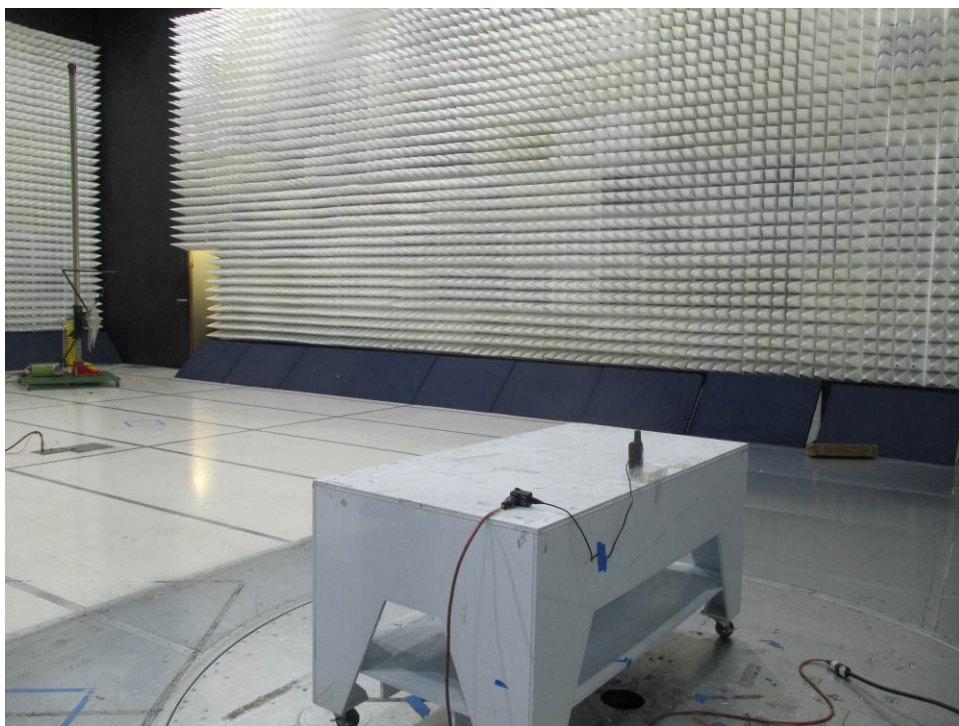
## 3.1.4 Test Configuration Photographs

The following photographs show the testing configurations used.



*Electromagnetic Radiated Disturbance Setup Photograph*

3.1.4 Test Configuration Photographs (Continued)



*Electromagnetic Radiated Disturbance Setup Photograph*



### 3.2 AC Mains Line-Conducted Disturbance

#### 3.2.1 Test Limits

**Table 6-1 FCC Part 15 Subpart B, EN 55022, AS/NZS CISPR 22, VCCI & ICES-003  
Limits for Conducted Disturbance at the Mains Ports**

| Frequency<br>Band MHz | Class A Limit dB (μV) |         | Class B Limit dB (μV)                                                 |                                                                       |
|-----------------------|-----------------------|---------|-----------------------------------------------------------------------|-----------------------------------------------------------------------|
|                       | Quasi-Peak            | Average | Quasi-Peak                                                            | Average                                                               |
| 0.15-0.50             | 79                    | 66      | 66 to 56<br>Decreases linearly with the<br>logarithm of the frequency | 56 to 46<br>Decreases linearly with the<br>logarithm of the frequency |
| 0.50-5.00             | 73                    | 60      | 56                                                                    | 46                                                                    |
| 5.00-30.00            | 73                    | 60      | 60                                                                    | 50                                                                    |

*Note: At the transition frequency the lower limit applies.*



### 3.2.2 Test Procedure

Measurements are carried out using quasi-peak and average detector receivers in accordance with CISPR 16. An AMN is required to provide a defined impedance at high frequencies across the power feed at the point of measurement of terminal voltage and also to provide isolation of the circuit under test from the ambient noise on the power lines. An AMN as defined in CISPR 16 shall be used.

The EUT is located so that the distance between the boundary of the EUT and the closest surface of the AMN is 0.8m.

Where a flexible mains cord is provided by the manufacturer, this shall be 1m long or if in excess of 1m, the excess cable is folded back and forth as far as possible so as to form a bundle not exceeding 0.4m in length.

The EUT is arranged and connected with cables terminated in accordance with the product specification.

Conducted disturbance is measured between the phase lead and the reference ground, and between the neutral lead and the reference ground. Both measured values are reported.

The EUT, where intended for tabletop use, is placed on a table whose top is 0.4m above the ground plane. The EUT shall be kept at least 0.8m from any other metal surface or other ground plane not being part of the EUT. The table is constructed of non-conductive materials. Its dimensions are 1m by 1.5m, but may be extended for larger EUT.

Floor standing EUTs are placed on a horizontal metal ground plane and isolated from the ground plane by 3 to 12 mm of insulating material. The metal ground plane extends at least 0.5m beyond the boundaries of the EUT and has minimum dimensions of 2m by 2m.

Equipment setup for conducted disturbance tests followed the guidelines of ANSI C63.4.

|                   |                     |
|-------------------|---------------------|
| <b>Tested By:</b> | Anderson Soungpanya |
| <b>Test Date:</b> | March 2, 2015       |

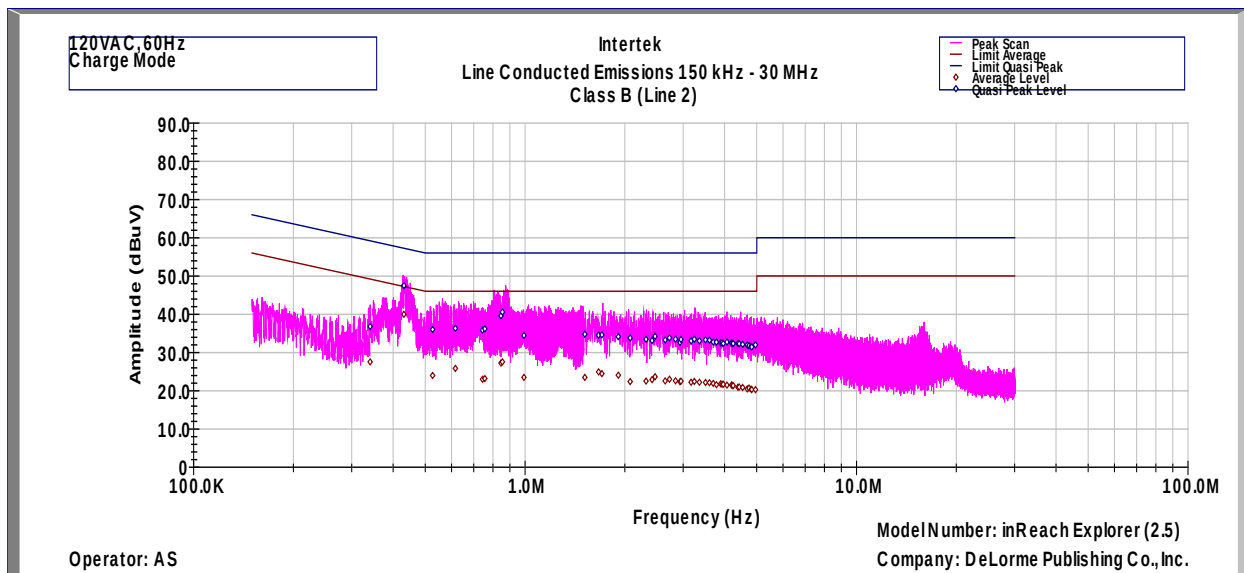
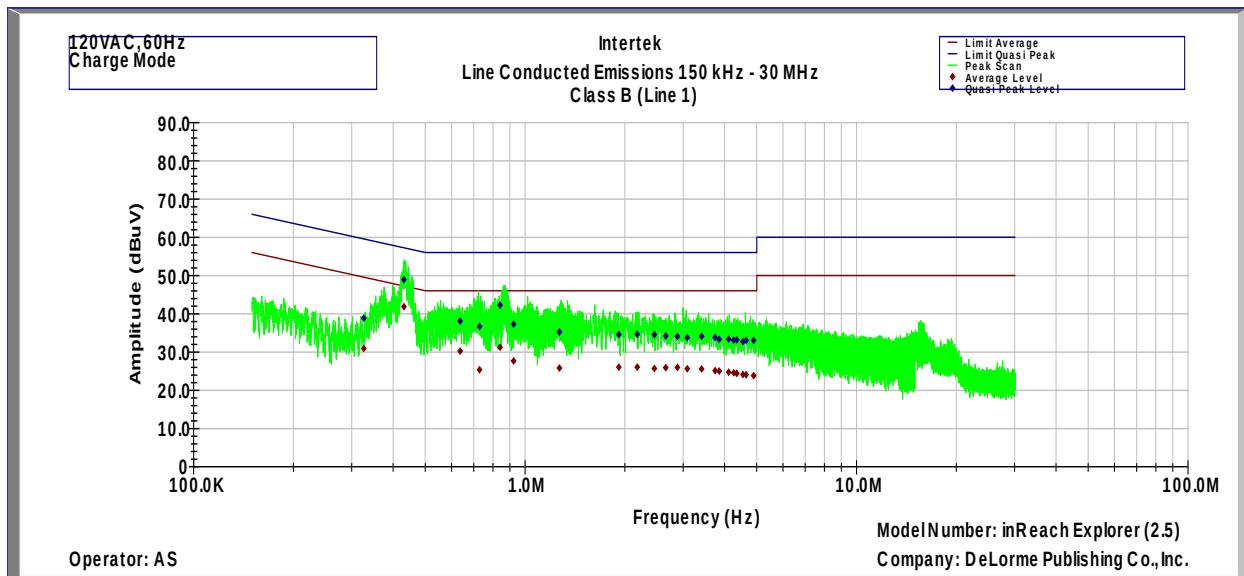
21.2°C, 42.2% RH, 30.2 Hg in

## 3.2.3 Test Results

The EUT met the conducted disturbance requirement of CISPR22 for a Class B device.

**FCC Part 15 Subpart B, EN 55022, AS/NZS CISPR 22, VCCI & ICES-003**

### 120VAC 60Hz





CISPR Class B (Line 1) (Continued)

Intertek Testing Services

120VAC 60Hz

Line Conducted Emissions 150 kHz - 30 MHz

CISPR Class B (Line 1)

Operator: AS

Model Number: INRCH25

Company: DeLorme Publishing Co., Inc.

| Frequency | Av Level | QP Level | Av Limit | QP Limit | Av Margin | QP Margin |
|-----------|----------|----------|----------|----------|-----------|-----------|
| MHz       | dBuV     | dBuV     | dBuV     | dBuV     | dB        | dB        |
| 0.326     | 30.9     | 38.8     | 51       | 61       | -20.0     | -22.1     |
| 0.431     | 41.8     | 48.9     | 48       | 58       | -6.1      | -9.0      |
| 0.637     | 30.2     | 38.1     | 46       | 56       | -15.8     | -17.9     |
| 0.729     | 25.3     | 36.7     | 46       | 56       | -20.7     | -19.3     |
| 0.840     | 31.3     | 42.3     | 46       | 56       | -14.7     | -13.8     |
| 0.923     | 27.7     | 37.3     | 46       | 56       | -18.3     | -18.7     |
| 1.269     | 25.8     | 35.2     | 46       | 56       | -20.2     | -20.8     |
| 1.917     | 26.0     | 34.6     | 46       | 56       | -20.0     | -21.4     |
| 2.180     | 26.0     | 34.6     | 46       | 56       | -20.0     | -21.4     |
| 2.454     | 25.7     | 34.5     | 46       | 56       | -20.3     | -21.5     |
| 2.657     | 25.9     | 34.2     | 46       | 56       | -20.1     | -21.8     |
| 2.881     | 26.0     | 34.1     | 46       | 56       | -20.0     | -21.9     |
| 3.084     | 25.6     | 33.7     | 46       | 56       | -20.4     | -22.3     |
| 3.407     | 25.5     | 34.1     | 46       | 56       | -20.5     | -21.9     |
| 3.741     | 25.1     | 33.8     | 46       | 56       | -20.9     | -22.2     |
| 3.851     | 25.0     | 33.3     | 46       | 56       | -21.0     | -22.7     |
| 4.111     | 24.7     | 33.4     | 46       | 56       | -21.3     | -22.6     |
| 4.260     | 24.6     | 33.1     | 46       | 56       | -21.4     | -22.9     |
| 4.350     | 24.4     | 33.1     | 46       | 56       | -21.6     | -22.9     |
| 4.541     | 24.1     | 32.7     | 46       | 56       | -21.9     | -23.3     |
| 4.642     | 24.1     | 33.0     | 46       | 56       | -21.9     | -23.0     |
| 4.890     | 23.8     | 33.0     | 46       | 56       | -22.2     | -23.0     |

CISPR Class B (Line 2) (Continued)

CISPR Class B (Line 2)

120VAC 60Hz

Operator: AS

Model Number: INRCH25

Company: DeLorme Publishing Co., Inc.

| Frequency | Av Level | QP Level | Av Limit | QP Limit | Av Margin | QP Margin |
|-----------|----------|----------|----------|----------|-----------|-----------|
| MHz       | dBuV     | dBuV     | dBuV     | dBuV     | dB        | dB        |
| 0.341     | 27.5     | 36.8     | 50.5     | 60.5     | -23.0     | -23.8     |
| 0.431     | 40.0     | 47.5     | 48       | 58       | -8.0      | -10.5     |
| 0.526     | 24.0     | 36.0     | 46       | 56       | -22.0     | -20.0     |
| 0.616     | 25.8     | 36.3     | 46       | 56       | -20.2     | -19.7     |
| 0.744     | 23.0     | 35.8     | 46       | 56       | -23.0     | -20.2     |
| 0.756     | 23.2     | 36.2     | 46       | 56       | -22.8     | -19.8     |
| 0.846     | 27.2     | 39.6     | 46       | 56       | -18.8     | -16.4     |
| 0.854     | 27.5     | 40.6     | 46       | 56       | -18.5     | -15.4     |
| 0.992     | 23.5     | 34.4     | 46       | 56       | -22.5     | -21.6     |
| 1.514     | 23.5     | 34.8     | 46       | 56       | -22.5     | -21.2     |
| 1.666     | 24.9     | 34.5     | 46       | 56       | -21.1     | -21.5     |
| 1.705     | 24.5     | 34.6     | 46       | 56       | -21.5     | -21.4     |
| 1.911     | 24.1     | 34.1     | 46       | 56       | -21.9     | -21.9     |
| 2.075     | 22.4     | 33.8     | 46       | 56       | -23.6     | -22.2     |
| 2.317     | 22.5     | 33.4     | 46       | 56       | -23.5     | -22.6     |
| 2.416     | 22.9     | 33.1     | 46       | 56       | -23.1     | -22.9     |
| 2.466     | 23.6     | 34.2     | 46       | 56       | -22.4     | -21.8     |
| 2.645     | 22.5     | 33.3     | 46       | 56       | -23.5     | -22.7     |
| 2.726     | 23.0     | 33.8     | 46       | 56       | -23.0     | -22.2     |
| 2.842     | 22.6     | 33.5     | 46       | 56       | -23.4     | -22.5     |
| 2.932     | 22.4     | 32.6     | 46       | 56       | -23.6     | -23.4     |
| 2.953     | 22.5     | 33.4     | 46       | 56       | -23.5     | -22.6     |
| 3.168     | 22.2     | 33.0     | 46       | 56       | -23.8     | -23.0     |
| 3.239     | 22.4     | 33.5     | 46       | 56       | -23.6     | -22.5     |
| 3.356     | 22.2     | 33.0     | 46       | 56       | -23.8     | -23.0     |
| 3.502     | 22.1     | 33.3     | 46       | 56       | -23.9     | -22.7     |
| 3.598     | 22.1     | 33.2     | 46       | 56       | -23.9     | -22.8     |
| 3.696     | 21.9     | 32.7     | 46       | 56       | -24.1     | -23.3     |
| 3.777     | 21.6     | 32.7     | 46       | 56       | -24.4     | -23.3     |
| 3.890     | 21.8     | 32.5     | 46       | 56       | -24.2     | -23.5     |
| 3.926     | 21.7     | 32.5     | 46       | 56       | -24.3     | -23.5     |
| 3.962     | 21.7     | 32.3     | 46       | 56       | -24.3     | -23.7     |
| 4.063     | 21.5     | 32.7     | 46       | 56       | -24.5     | -23.3     |
| 4.195     | 21.5     | 32.5     | 46       | 56       | -24.5     | -23.5     |
| 4.222     | 21.4     | 32.3     | 46       | 56       | -24.6     | -23.7     |

CISPR Class B (Line 2) (Continued)

CISPR Class B (Line 2)

120VAC 60Hz

Operator: AS

Model Number: INRCH25

Company: DeLorme Publishing Co., Inc.

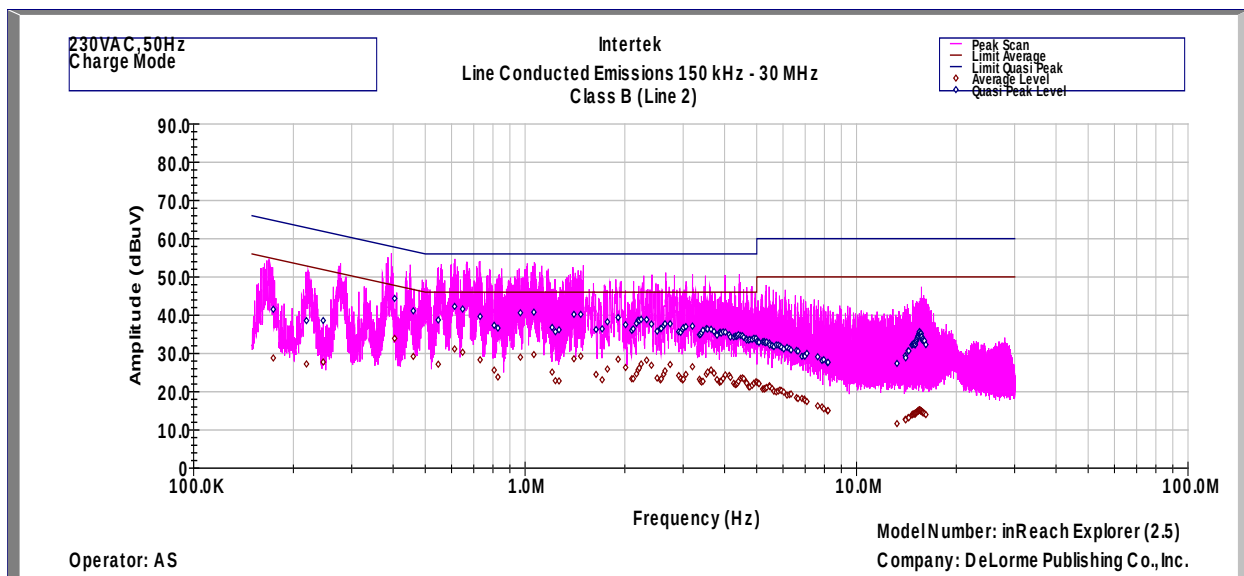
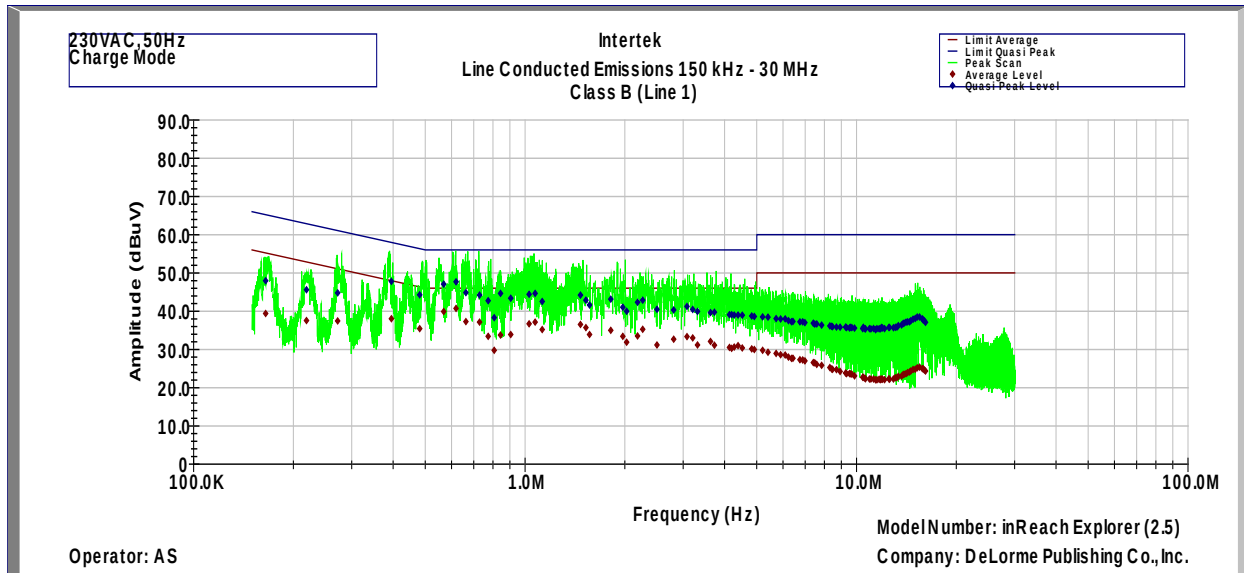
| Frequency | Av Level | QP Level | Av Limit | QP Limit | Av Margin | QP Margin |
|-----------|----------|----------|----------|----------|-----------|-----------|
| MHz       | dBuV     | dBuV     | dBuV     | dBuV     | dB        | dB        |
| 4.242     | 21.3     | 32.3     | 46       | 56       | -24.7     | -23.7     |
| 4.386     | 20.9     | 32.3     | 46       | 56       | -25.1     | -23.7     |
| 4.425     | 21.0     | 32.3     | 46       | 56       | -25.0     | -23.7     |
| 4.532     | 20.8     | 32.1     | 46       | 56       | -25.2     | -23.9     |
| 4.678     | 20.5     | 32.0     | 46       | 56       | -25.5     | -24.0     |
| 4.738     | 20.7     | 31.8     | 46       | 56       | -25.3     | -24.2     |
| 4.810     | 20.4     | 31.6     | 46       | 56       | -25.6     | -24.4     |
| 4.827     | 20.3     | 31.4     | 46       | 56       | -25.7     | -24.6     |
| 4.953     | 20.3     | 32.0     | 46       | 56       | -25.8     | -24.0     |

**Results:** Complies by 6.1dB at 120VAC 60Hz.

## 3.2.3 Test Results (continued)

### FCC Part 15 Subpart B, EN 55022, AS/NZS CISPR 22, VCCI & ICES-003

#### 230VAC 50Hz



CISPR Class B (Line 1) (Continued)

Intertek Testing Services

230VAC 50Hz

Line Conducted Emissions 150 kHz - 30 MHz

CISPR Class B (Line 1)

Operator: AS

Model Number: INRCH25

Company: DeLorme Publishing Co., Inc.

| Frequency | Av Level | QP Level | Av Limit | QP Limit | Av Margin | QP Margin |
|-----------|----------|----------|----------|----------|-----------|-----------|
| MHz       | dBuV     | dBuV     | dBuV     | dBuV     | dB        | dB        |
| 0.165     | 39.4     | 48.0     | 55.6     | 65.6     | -16.2     | -17.6     |
| 0.219     | 37.5     | 45.6     | 54       | 64       | -16.5     | -18.4     |
| 0.272     | 37.4     | 44.8     | 52.5     | 62.5     | -15.1     | -17.7     |
| 0.395     | 38.0     | 47.8     | 49       | 59       | -11.0     | -11.2     |
| 0.481     | 35.4     | 44.3     | 46.5     | 56.5     | -11.1     | -12.3     |
| 0.568     | 39.9     | 47.1     | 46       | 56       | -6.1      | -8.9      |
| 0.619     | 40.7     | 47.7     | 46       | 56       | -5.3      | -8.3      |
| 0.663     | 37.3     | 44.8     | 46       | 56       | -8.7      | -11.2     |
| 0.729     | 37.1     | 44.2     | 46       | 56       | -8.9      | -11.8     |
| 0.774     | 33.4     | 42.7     | 46       | 56       | -12.6     | -13.3     |
| 0.807     | 29.8     | 38.3     | 46       | 56       | -16.2     | -17.7     |
| 0.843     | 33.8     | 44.6     | 46       | 56       | -12.2     | -11.4     |
| 0.905     | 33.9     | 43.4     | 46       | 56       | -12.1     | -12.6     |
| 1.028     | 36.7     | 44.4     | 46       | 56       | -9.3      | -11.6     |
| 1.072     | 37.1     | 44.6     | 46       | 56       | -8.9      | -11.4     |
| 1.126     | 35.2     | 42.5     | 46       | 56       | -10.8     | -13.5     |
| 1.469     | 36.5     | 44.2     | 46       | 56       | -9.5      | -11.8     |
| 1.526     | 35.7     | 42.8     | 46       | 56       | -10.3     | -13.2     |
| 1.565     | 33.9     | 41.6     | 46       | 56       | -12.1     | -14.4     |
| 1.813     | 35.0     | 43.1     | 46       | 56       | -11.0     | -12.9     |
| 1.971     | 33.4     | 41.0     | 46       | 56       | -12.6     | -15.0     |
| 2.025     | 31.9     | 40.0     | 46       | 56       | -14.1     | -16.0     |
| 2.183     | 33.5     | 42.3     | 46       | 56       | -12.5     | -13.7     |
| 2.263     | 35.3     | 42.9     | 46       | 56       | -10.8     | -13.1     |
| 2.499     | 31.2     | 40.5     | 46       | 56       | -14.8     | -15.5     |
| 2.807     | 32.7     | 40.3     | 46       | 56       | -13.3     | -15.7     |
| 3.078     | 33.3     | 41.2     | 46       | 56       | -12.7     | -14.8     |
| 3.204     | 33.0     | 40.4     | 46       | 56       | -13.0     | -15.6     |
| 3.311     | 31.1     | 39.9     | 46       | 56       | -14.9     | -16.1     |
| 3.625     | 32.1     | 39.6     | 46       | 56       | -13.9     | -16.4     |
| 3.726     | 31.1     | 39.7     | 46       | 56       | -14.9     | -16.3     |
| 4.135     | 30.5     | 39.1     | 46       | 56       | -15.5     | -16.9     |

CISPR Class B (Line 1) (Continued)

CISPR Class B (Line 1)

230VAC 50Hz

Operator: AS

Model Number: INRCH25

Company: DeLorme Publishing Co., Inc.

| Frequency | Av Level | QP Level | Av Limit | QP Limit | Av Margin | QP Margin |
|-----------|----------|----------|----------|----------|-----------|-----------|
| MHz       | dBuV     | dBuV     | dBuV     | dBuV     | dB        | dB        |
| 4.198     | 30.3     | 39.1     | 46       | 56       | -15.7     | -16.9     |
| 4.275     | 30.6     | 39.0     | 46       | 56       | -15.4     | -17.0     |
| 4.389     | 31.0     | 39.0     | 46       | 56       | -15.0     | -17.0     |
| 4.520     | 30.4     | 38.9     | 46       | 56       | -15.6     | -17.1     |
| 4.827     | 30.1     | 38.8     | 46       | 56       | -15.9     | -17.3     |
| 4.914     | 30.0     | 38.6     | 46       | 56       | -16.0     | -17.4     |
| 5.207     | 29.8     | 38.5     | 50       | 60       | -20.2     | -21.5     |
| 5.404     | 29.2     | 38.4     | 50       | 60       | -20.8     | -21.6     |
| 5.717     | 28.9     | 38.0     | 50       | 60       | -21.1     | -22.0     |
| 5.899     | 28.6     | 38.0     | 50       | 60       | -21.4     | -22.0     |
| 6.090     | 28.5     | 38.0     | 50       | 60       | -21.5     | -22.0     |
| 6.227     | 28.0     | 37.5     | 50       | 60       | -22.0     | -22.5     |
| 6.362     | 27.6     | 37.2     | 50       | 60       | -22.4     | -22.8     |
| 6.427     | 27.7     | 37.3     | 50       | 60       | -22.3     | -22.7     |
| 6.744     | 27.3     | 37.2     | 50       | 60       | -22.7     | -22.8     |
| 6.878     | 27.2     | 37.2     | 50       | 60       | -22.8     | -22.8     |
| 6.983     | 27.0     | 37.0     | 50       | 60       | -23.0     | -23.0     |
| 7.401     | 26.5     | 36.9     | 50       | 60       | -23.5     | -23.1     |
| 7.478     | 26.5     | 36.6     | 50       | 60       | -23.5     | -23.4     |
| 7.580     | 26.1     | 36.6     | 50       | 60       | -23.9     | -23.4     |
| 7.845     | 25.8     | 36.3     | 50       | 60       | -24.2     | -23.7     |
| 8.302     | 25.3     | 36.2     | 50       | 60       | -24.8     | -23.8     |
| 8.412     | 24.9     | 36.0     | 50       | 60       | -25.1     | -24.0     |
| 8.457     | 24.8     | 35.9     | 50       | 60       | -25.2     | -24.1     |
| 8.693     | 24.7     | 35.8     | 50       | 60       | -25.3     | -24.2     |
| 8.914     | 24.2     | 35.8     | 50       | 60       | -25.8     | -24.2     |
| 9.266     | 23.8     | 35.8     | 50       | 60       | -26.2     | -24.2     |
| 9.329     | 23.6     | 35.7     | 50       | 60       | -26.4     | -24.3     |
| 9.514     | 23.7     | 35.6     | 50       | 60       | -26.3     | -24.4     |
| 9.568     | 23.6     | 35.8     | 50       | 60       | -26.4     | -24.2     |
| 9.675     | 23.5     | 35.7     | 50       | 60       | -26.5     | -24.3     |
| 9.854     | 23.1     | 35.6     | 50       | 60       | -26.9     | -24.4     |

|        |      |      |    |    |       |       |
|--------|------|------|----|----|-------|-------|
| 10.433 | 22.7 | 35.4 | 50 | 60 | -27.3 | -24.6 |
| 10.475 | 22.7 | 35.8 | 50 | 60 | -27.3 | -24.3 |

CISPR Class B (Line 1) (Continued)

CISPR Class B (Line 1)

230VAC 50Hz

Operator: AS

Model Number: INRCH25

Company: DeLorme Publishing Co., Inc.

| Frequency | Av Level | QP Level | Av Limit | QP Limit | Av Margin | QP Margin |
|-----------|----------|----------|----------|----------|-----------|-----------|
| MHz       | dBuV     | dBuV     | dBuV     | dBuV     | dB        | dB        |
| 10.601    | 22.5     | 35.4     | 50       | 60       | -27.5     | -24.6     |
| 10.630    | 22.3     | 35.4     | 50       | 60       | -27.7     | -24.6     |
| 10.929    | 22.2     | 35.4     | 50       | 60       | -27.8     | -24.6     |
| 11.045    | 22.3     | 35.3     | 50       | 60       | -27.7     | -24.7     |
| 11.251    | 22.2     | 35.5     | 50       | 60       | -27.8     | -24.5     |
| 11.403    | 22.0     | 35.1     | 50       | 60       | -28.0     | -24.9     |
| 11.511    | 22.0     | 35.4     | 50       | 60       | -28.0     | -24.6     |
| 11.693    | 22.2     | 35.4     | 50       | 60       | -27.8     | -24.6     |
| 11.780    | 22.1     | 35.4     | 50       | 60       | -27.9     | -24.6     |
| 11.824    | 22.1     | 35.5     | 50       | 60       | -27.9     | -24.5     |
| 11.899    | 22.2     | 35.7     | 50       | 60       | -27.8     | -24.3     |
| 11.971    | 22.2     | 35.6     | 50       | 60       | -27.8     | -24.4     |
| 12.144    | 22.1     | 35.4     | 50       | 60       | -27.9     | -24.6     |
| 12.508    | 22.3     | 35.7     | 50       | 60       | -27.7     | -24.3     |
| 12.565    | 22.2     | 35.7     | 50       | 60       | -27.8     | -24.3     |
| 12.914    | 22.2     | 35.7     | 50       | 60       | -27.8     | -24.3     |
| 13.090    | 22.6     | 35.8     | 50       | 60       | -27.4     | -24.2     |
| 13.236    | 22.6     | 35.8     | 50       | 60       | -27.4     | -24.2     |
| 13.359    | 22.9     | 36.2     | 50       | 60       | -27.1     | -23.8     |
| 13.663    | 23.0     | 36.4     | 50       | 60       | -27.0     | -23.6     |
| 13.815    | 23.4     | 36.7     | 50       | 60       | -26.6     | -23.3     |
| 13.899    | 23.5     | 36.8     | 50       | 60       | -26.5     | -23.2     |
| 14.090    | 23.6     | 37.1     | 50       | 60       | -26.4     | -22.9     |
| 14.248    | 23.9     | 37.2     | 50       | 60       | -26.1     | -22.8     |
| 14.439    | 24.1     | 37.2     | 50       | 60       | -25.9     | -22.8     |
| 14.574    | 24.4     | 37.5     | 50       | 60       | -25.6     | -22.5     |
| 14.797    | 24.8     | 37.9     | 50       | 60       | -25.3     | -22.1     |
| 15.024    | 24.8     | 38.1     | 50       | 60       | -25.2     | -21.9     |
| 15.236    | 25.2     | 38.5     | 50       | 60       | -24.8     | -21.5     |
| 15.484    | 25.3     | 38.5     | 50       | 60       | -24.7     | -21.5     |
| 15.782    | 25.0     | 38.0     | 50       | 60       | -25.0     | -22.0     |
| 15.869    | 24.9     | 37.7     | 50       | 60       | -25.1     | -22.3     |



|        |      |      |    |    |       |       |
|--------|------|------|----|----|-------|-------|
| 16.003 | 24.6 | 37.5 | 50 | 60 | -25.4 | -22.5 |
| 16.132 | 24.3 | 37.1 | 50 | 60 | -25.7 | -22.9 |



CISPR Class B (Line 2) (Continued)

Intertek Testing Services

230VAC 50Hz

Line Conducted Emissions 150 kHz - 30 MHz

CISPR Class B (Line 2)

Operator: AS

Model Number: INRCH25

Company: DeLorme Publishing Co., Inc.

| Frequency | Av Level | QP Level | Av Limit | QP Limit | Av Margin | QP Margin |
|-----------|----------|----------|----------|----------|-----------|-----------|
| MHz       | dBuV     | dBuV     | dBuV     | dBuV     | dB        | dB        |
| 0.174     | 28.8     | 41.5     | 55.3     | 65.3     | -26.5     | -23.8     |
| 0.219     | 27.2     | 38.6     | 54       | 64       | -26.8     | -25.5     |
| 0.246     | 27.7     | 38.6     | 53.3     | 63.3     | -25.5     | -24.6     |
| 0.404     | 33.9     | 44.4     | 48.7     | 58.7     | -14.8     | -14.4     |
| 0.460     | 29.2     | 41.1     | 47.1     | 57.1     | -17.9     | -16.0     |
| 0.547     | 27.2     | 38.8     | 46       | 56       | -18.8     | -17.3     |
| 0.613     | 31.1     | 42.3     | 46       | 56       | -14.9     | -13.7     |
| 0.648     | 30.3     | 41.6     | 46       | 56       | -15.7     | -14.4     |
| 0.732     | 28.3     | 39.7     | 46       | 56       | -17.7     | -16.3     |
| 0.807     | 25.6     | 37.3     | 46       | 56       | -20.4     | -18.7     |
| 0.828     | 23.8     | 36.6     | 46       | 56       | -22.2     | -19.4     |
| 0.968     | 29.0     | 40.6     | 46       | 56       | -17.0     | -15.4     |
| 1.063     | 29.7     | 40.8     | 46       | 56       | -16.3     | -15.2     |
| 1.207     | 25.1     | 36.8     | 46       | 56       | -20.9     | -19.2     |
| 1.234     | 22.9     | 35.7     | 46       | 56       | -23.1     | -20.3     |
| 1.266     | 22.8     | 36.2     | 46       | 56       | -23.2     | -19.8     |
| 1.404     | 28.6     | 40.2     | 46       | 56       | -17.4     | -15.8     |
| 1.472     | 29.3     | 40.2     | 46       | 56       | -16.7     | -15.8     |
| 1.637     | 24.5     | 36.3     | 46       | 56       | -21.5     | -19.8     |
| 1.708     | 23.1     | 36.4     | 46       | 56       | -22.9     | -19.6     |
| 1.771     | 25.9     | 38.2     | 46       | 56       | -20.1     | -17.8     |
| 1.908     | 28.5     | 39.4     | 46       | 56       | -17.5     | -16.6     |
| 2.010     | 26.3     | 37.5     | 46       | 56       | -19.7     | -18.5     |
| 2.099     | 23.4     | 36.0     | 46       | 56       | -22.6     | -20.0     |
| 2.120     | 23.4     | 36.4     | 46       | 56       | -22.6     | -19.6     |
| 2.168     | 24.6     | 37.9     | 46       | 56       | -21.4     | -18.1     |
| 2.192     | 25.7     | 38.7     | 46       | 56       | -20.3     | -17.3     |
| 2.210     | 26.2     | 38.5     | 46       | 56       | -19.8     | -17.5     |
| 2.240     | 27.2     | 38.9     | 46       | 56       | -18.8     | -17.1     |
| 2.326     | 28.2     | 38.8     | 46       | 56       | -17.8     | -17.2     |
| 2.404     | 26.9     | 37.7     | 46       | 56       | -19.1     | -18.3     |
| 2.502     | 23.5     | 35.8     | 46       | 56       | -22.5     | -20.2     |

CISPR Class B (Line 2) (Continued)

CISPR Class B (Line 2)

230VAC 50Hz

Operator: AS

Model Number: INRCH25

Company: DeLorme Publishing Co., Inc.

| Frequency | Av Level | QP Level | Av Limit | QP Limit | Av Margin | QP Margin |
|-----------|----------|----------|----------|----------|-----------|-----------|
| MHz       | dBuV     | dBuV     | dBuV     | dBuV     | dB        | dB        |
| 2.559     | 23.1     | 36.5     | 46       | 56       | -22.9     | -19.5     |
| 2.574     | 23.3     | 36.5     | 46       | 56       | -22.7     | -19.5     |
| 2.619     | 24.6     | 37.3     | 46       | 56       | -21.4     | -18.7     |
| 2.642     | 25.4     | 37.7     | 46       | 56       | -20.6     | -18.3     |
| 2.738     | 27.1     | 37.7     | 46       | 56       | -18.9     | -18.3     |
| 2.908     | 24.2     | 35.7     | 46       | 56       | -21.8     | -20.3     |
| 2.947     | 23.5     | 35.5     | 46       | 56       | -22.5     | -20.5     |
| 2.983     | 23.1     | 36.2     | 46       | 56       | -22.9     | -19.8     |
| 3.001     | 23.2     | 36.7     | 46       | 56       | -22.8     | -19.3     |
| 3.054     | 24.5     | 37.0     | 46       | 56       | -21.5     | -19.0     |
| 3.198     | 26.5     | 37.1     | 46       | 56       | -19.5     | -18.9     |
| 3.359     | 23.2     | 34.9     | 46       | 56       | -22.8     | -21.1     |
| 3.383     | 22.7     | 34.9     | 46       | 56       | -23.3     | -21.1     |
| 3.407     | 22.5     | 35.4     | 46       | 56       | -23.5     | -20.6     |
| 3.439     | 22.7     | 36.0     | 46       | 56       | -23.3     | -20.0     |
| 3.523     | 24.6     | 36.5     | 46       | 56       | -21.4     | -19.5     |
| 3.553     | 25.1     | 36.3     | 46       | 56       | -20.9     | -19.7     |
| 3.639     | 25.6     | 36.3     | 46       | 56       | -20.4     | -19.7     |
| 3.714     | 24.8     | 35.7     | 46       | 56       | -21.2     | -20.3     |
| 3.792     | 23.1     | 34.7     | 46       | 56       | -22.9     | -21.3     |
| 3.860     | 22.5     | 35.5     | 46       | 56       | -23.5     | -20.5     |
| 3.881     | 22.7     | 35.5     | 46       | 56       | -23.3     | -20.5     |
| 3.902     | 22.7     | 35.3     | 46       | 56       | -23.3     | -20.7     |
| 3.956     | 23.4     | 35.6     | 46       | 56       | -22.6     | -20.4     |
| 4.019     | 24.4     | 35.6     | 46       | 56       | -21.6     | -20.4     |
| 4.129     | 24.2     | 34.9     | 46       | 56       | -21.8     | -21.1     |
| 4.162     | 23.7     | 34.3     | 46       | 56       | -22.3     | -21.7     |
| 4.260     | 22.2     | 34.3     | 46       | 56       | -23.8     | -21.7     |
| 4.305     | 21.8     | 34.5     | 46       | 56       | -24.2     | -21.5     |
| 4.338     | 21.9     | 34.4     | 46       | 56       | -24.1     | -21.6     |
| 4.368     | 22.2     | 34.6     | 46       | 56       | -23.8     | -21.4     |
| 4.401     | 22.7     | 34.9     | 46       | 56       | -23.3     | -21.1     |



|       |      |      |    |    |       |       |
|-------|------|------|----|----|-------|-------|
| 4.469 | 23.5 | 34.7 | 46 | 56 | -22.5 | -21.3 |
| 4.526 | 23.6 | 34.6 | 46 | 56 | -22.4 | -21.4 |

CISPR Class B (Line 2) (Continued)

CISPR Class B (Line 2)

230VAC 50Hz

Operator: AS

Model Number: INRCH25

Company: DeLorme Publishing Co., Inc.

| Frequency | Av Level | QP Level | Av Limit | QP Limit | Av Margin | QP Margin |
|-----------|----------|----------|----------|----------|-----------|-----------|
| MHz       | dBuV     | dBuV     | dBuV     | dBuV     | dB        | dB        |
| 4.568     | 23.4     | 34.2     | 46       | 56       | -22.6     | -21.8     |
| 4.651     | 22.4     | 33.8     | 46       | 56       | -23.6     | -22.2     |
| 4.660     | 22.2     | 33.5     | 46       | 56       | -23.8     | -22.5     |
| 4.729     | 21.3     | 33.5     | 46       | 56       | -24.7     | -22.5     |
| 4.762     | 21.2     | 33.7     | 46       | 56       | -24.8     | -22.3     |
| 4.839     | 21.6     | 33.7     | 46       | 56       | -24.4     | -22.3     |
| 4.899     | 22.2     | 34.0     | 46       | 56       | -23.8     | -22.0     |
| 4.971     | 22.6     | 33.9     | 46       | 56       | -23.4     | -22.1     |
| 5.007     | 22.4     | 33.2     | 50       | 60       | -27.6     | -26.8     |
| 5.060     | 22.2     | 33.1     | 50       | 60       | -27.8     | -26.9     |
| 5.075     | 22.1     | 32.9     | 50       | 60       | -27.9     | -27.1     |
| 5.210     | 20.7     | 33.0     | 50       | 60       | -29.3     | -27.0     |
| 5.257     | 20.8     | 33.2     | 50       | 60       | -29.2     | -26.8     |
| 5.272     | 20.7     | 32.9     | 50       | 60       | -29.3     | -27.1     |
| 5.317     | 20.9     | 32.8     | 50       | 60       | -29.1     | -27.2     |
| 5.356     | 21.1     | 33.0     | 50       | 60       | -28.9     | -27.0     |
| 5.457     | 21.5     | 32.7     | 50       | 60       | -28.5     | -27.3     |
| 5.469     | 21.3     | 32.2     | 50       | 60       | -28.7     | -27.8     |
| 5.562     | 20.8     | 32.0     | 50       | 60       | -29.2     | -28.0     |
| 5.630     | 20.1     | 31.8     | 50       | 60       | -29.9     | -28.2     |
| 5.720     | 19.9     | 32.2     | 50       | 60       | -30.1     | -27.8     |
| 5.798     | 20.1     | 32.2     | 50       | 60       | -29.9     | -27.8     |
| 5.872     | 20.4     | 32.0     | 50       | 60       | -29.6     | -28.0     |
| 5.935     | 20.3     | 31.6     | 50       | 60       | -29.7     | -28.4     |
| 6.030     | 19.9     | 31.2     | 50       | 60       | -30.1     | -28.8     |
| 6.168     | 19.1     | 31.6     | 50       | 60       | -30.9     | -28.4     |
| 6.269     | 19.2     | 31.2     | 50       | 60       | -30.8     | -28.8     |
| 6.341     | 19.4     | 30.9     | 50       | 60       | -30.6     | -29.1     |
| 6.592     | 18.4     | 30.8     | 50       | 60       | -31.6     | -29.2     |
| 6.654     | 18.2     | 30.6     | 50       | 60       | -31.8     | -29.4     |
| 6.842     | 18.2     | 29.2     | 50       | 60       | -31.8     | -30.8     |
| 6.953     | 18.0     | 29.4     | 50       | 60       | -32.0     | -30.6     |
| 6.980     | 17.7     | 29.3     | 50       | 60       | -32.3     | -30.7     |
| 7.078     | 17.4     | 30.0     | 50       | 60       | -32.6     | -30.0     |

CISPR Class B (Line 2) (Continued)

CISPR Class B (Line 2)

230VAC 50Hz

Operator: AS

Model Number: INRCH25

Company: DeLorme Publishing Co., Inc.

| Frequency | Av Level | QP Level | Av Limit | QP Limit | Av Margin | QP Margin |
|-----------|----------|----------|----------|----------|-----------|-----------|
| MHz       | dBuV     | dBuV     | dBuV     | dBuV     | dB        | dB        |
| 7.633     | 16.3     | 29.1     | 50       | 60       | -33.7     | -30.9     |
| 7.866     | 16.0     | 28.1     | 50       | 60       | -34.0     | -31.9     |
| 7.959     | 15.5     | 28.4     | 50       | 60       | -34.5     | -31.6     |
| 8.171     | 15.0     | 27.6     | 50       | 60       | -35.0     | -32.4     |
| 8.201     | 15.0     | 27.7     | 50       | 60       | -35.0     | -32.3     |
| 13.239    | 11.6     | 27.4     | 50       | 60       | -38.4     | -32.6     |
| 14.021    | 12.8     | 29.4     | 50       | 60       | -37.2     | -30.6     |
| 14.057    | 12.6     | 28.8     | 50       | 60       | -37.4     | -31.2     |
| 14.308    | 13.2     | 30.7     | 50       | 60       | -36.8     | -29.3     |
| 14.365    | 13.2     | 30.6     | 50       | 60       | -36.8     | -29.4     |
| 14.678    | 13.9     | 32.2     | 50       | 60       | -36.1     | -27.8     |
| 14.753    | 14.0     | 32.3     | 50       | 60       | -36.0     | -27.7     |
| 14.800    | 14.1     | 32.4     | 50       | 60       | -35.8     | -27.6     |
| 14.911    | 14.1     | 32.5     | 50       | 60       | -35.9     | -27.5     |
| 14.938    | 14.3     | 32.8     | 50       | 60       | -35.7     | -27.2     |
| 15.006    | 14.1     | 32.2     | 50       | 60       | -35.9     | -27.8     |
| 15.033    | 14.2     | 32.4     | 50       | 60       | -35.8     | -27.6     |
| 15.075    | 14.4     | 33.1     | 50       | 60       | -35.6     | -26.9     |
| 15.141    | 14.5     | 33.3     | 50       | 60       | -35.5     | -26.7     |
| 15.197    | 14.7     | 33.7     | 50       | 60       | -35.3     | -26.3     |
| 15.257    | 14.8     | 34.1     | 50       | 60       | -35.2     | -25.9     |
| 15.308    | 15.0     | 34.5     | 50       | 60       | -35.0     | -25.5     |
| 15.347    | 14.9     | 34.5     | 50       | 60       | -35.1     | -25.5     |
| 15.400    | 15.0     | 35.0     | 50       | 60       | -35.0     | -25.0     |
| 15.445    | 15.2     | 35.2     | 50       | 60       | -34.8     | -24.8     |
| 15.460    | 15.2     | 35.6     | 50       | 60       | -34.8     | -24.4     |
| 15.481    | 15.2     | 35.7     | 50       | 60       | -34.8     | -24.3     |
| 15.532    | 15.1     | 35.2     | 50       | 60       | -34.9     | -24.8     |
| 15.574    | 15.1     | 35.1     | 50       | 60       | -34.9     | -24.9     |
| 15.615    | 14.9     | 35.1     | 50       | 60       | -35.1     | -24.9     |
| 15.645    | 14.9     | 35.2     | 50       | 60       | -35.1     | -24.8     |
| 15.666    | 14.9     | 34.5     | 50       | 60       | -35.1     | -25.5     |
| 15.726    | 14.8     | 34.4     | 50       | 60       | -35.2     | -25.6     |
| 15.780    | 14.6     | 33.5     | 50       | 60       | -35.4     | -26.5     |

CISPR Class B (Line 2) (Continued)

CISPR Class B (Line 2)

230VAC 50Hz

Operator: AS

Model Number: INRCH25

Company: DeLorme Publishing Co., Inc.

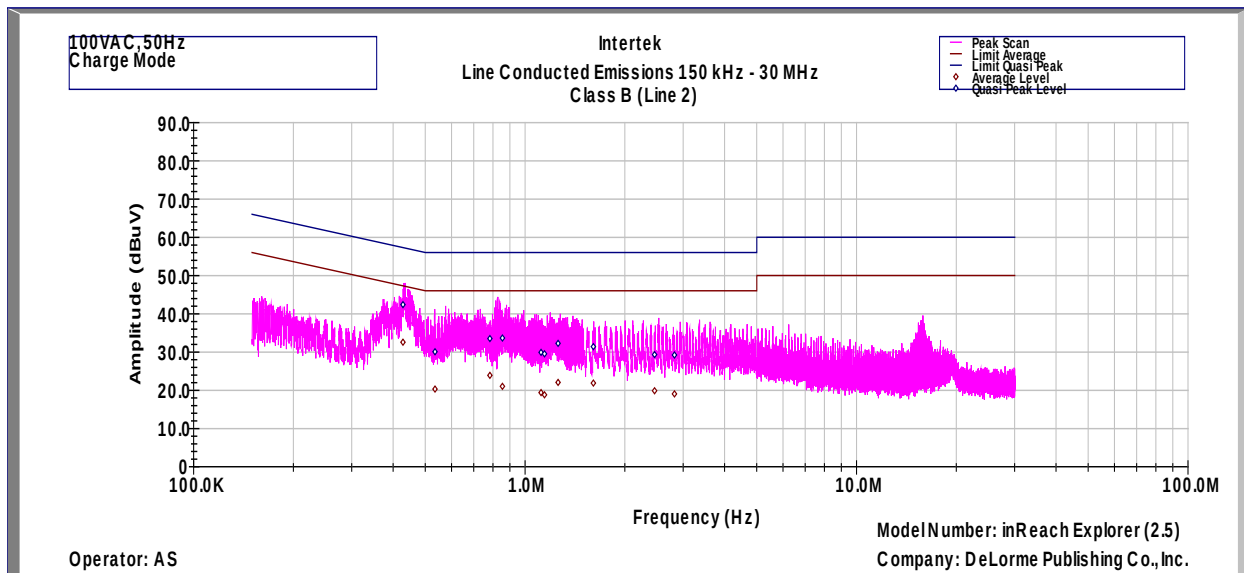
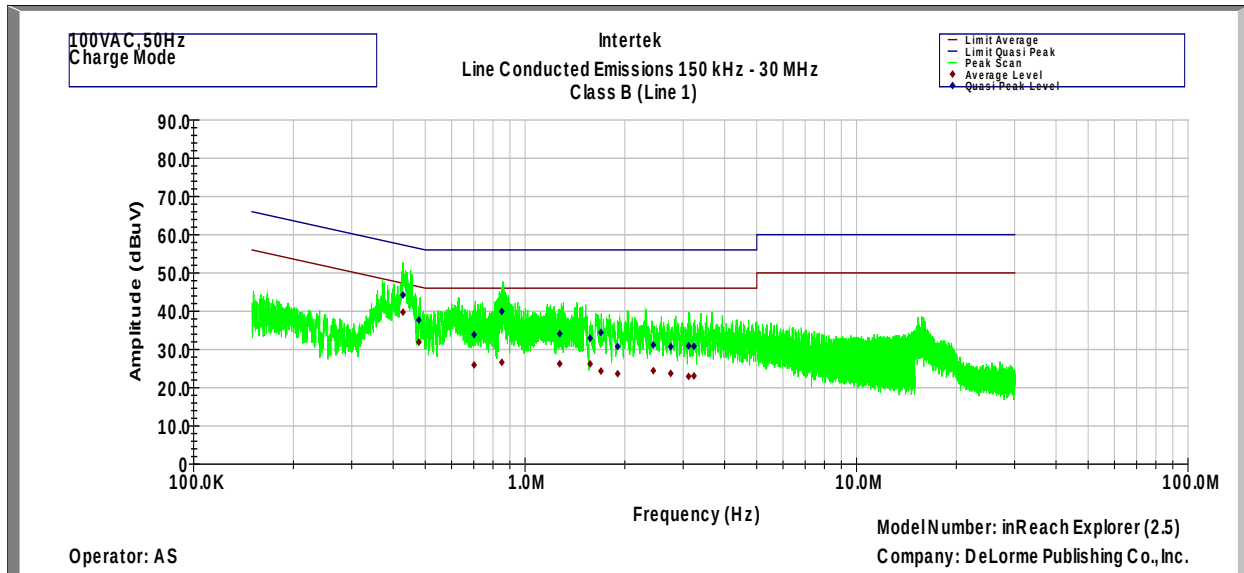
| Frequency | Av Level | QP Level | Av Limit | QP Limit | Av Margin | QP Margin |
|-----------|----------|----------|----------|----------|-----------|-----------|
| MHz       | dBuV     | dBuV     | dBuV     | dBuV     | dB        | dB        |
| 15.812    | 14.7     | 33.7     | 50       | 60       | -35.3     | -26.3     |
| 15.851    | 14.5     | 33.8     | 50       | 60       | -35.5     | -26.2     |
| 15.887    | 14.5     | 33.3     | 50       | 60       | -35.5     | -26.7     |
| 16.030    | 14.3     | 33.3     | 50       | 60       | -35.7     | -26.7     |
| 16.174    | 14.0     | 32.3     | 50       | 60       | -36.0     | -27.7     |

**Results:** Complies by 5.3dB at 230VAC 50Hz.

## 3.2.3 Test Results (continued)

### FCC Part 15 Subpart B, EN 55022, AS/NZS CISPR 22, VCCI & ICES-003

#### 100VAC 50Hz



CISPR Class B (Continued)

Intertek Testing Services

100VAC 50Hz

Line Conducted Emissions 150 kHz - 30 MHz

CISPR Class B (Line 1)

Operator: AS

Model Number: INRCH25

Company: DeLorme Publishing Co., Inc.

| Frequency | Av Level | QP Level | Av Limit | QP Limit | Av Margin | QP Margin |
|-----------|----------|----------|----------|----------|-----------|-----------|
| MHz       | dBuV     | dBuV     | dBuV     | dBuV     | dB        | dB        |
| 0.428     | 39.7     | 44.2     | 48.1     | 58.1     | -8.3      | -13.8     |
| 0.478     | 31.9     | 37.7     | 46.6     | 56.6     | -14.7     | -18.9     |
| 0.702     | 25.9     | 33.8     | 46       | 56       | -20.1     | -22.2     |
| 0.851     | 26.6     | 39.9     | 46       | 56       | -19.4     | -16.1     |
| 1.272     | 26.2     | 34.1     | 46       | 56       | -19.8     | -21.9     |
| 1.571     | 26.2     | 32.9     | 46       | 56       | -19.8     | -23.1     |
| 1.693     | 24.3     | 34.4     | 46       | 56       | -21.7     | -21.6     |
| 1.902     | 23.7     | 30.8     | 46       | 56       | -22.3     | -25.2     |
| 2.437     | 24.4     | 31.2     | 46       | 56       | -21.6     | -24.8     |
| 2.750     | 23.7     | 30.7     | 46       | 56       | -22.3     | -25.3     |
| 3.114     | 22.9     | 30.9     | 46       | 56       | -23.1     | -25.1     |
| 3.231     | 23.1     | 30.8     | 46       | 56       | -22.9     | -25.2     |

CISPR Class B (Line 2)

100VAC 50Hz

Operator: AS

Model Number: INRCH25

Company: DeLorme Publishing Co., Inc.

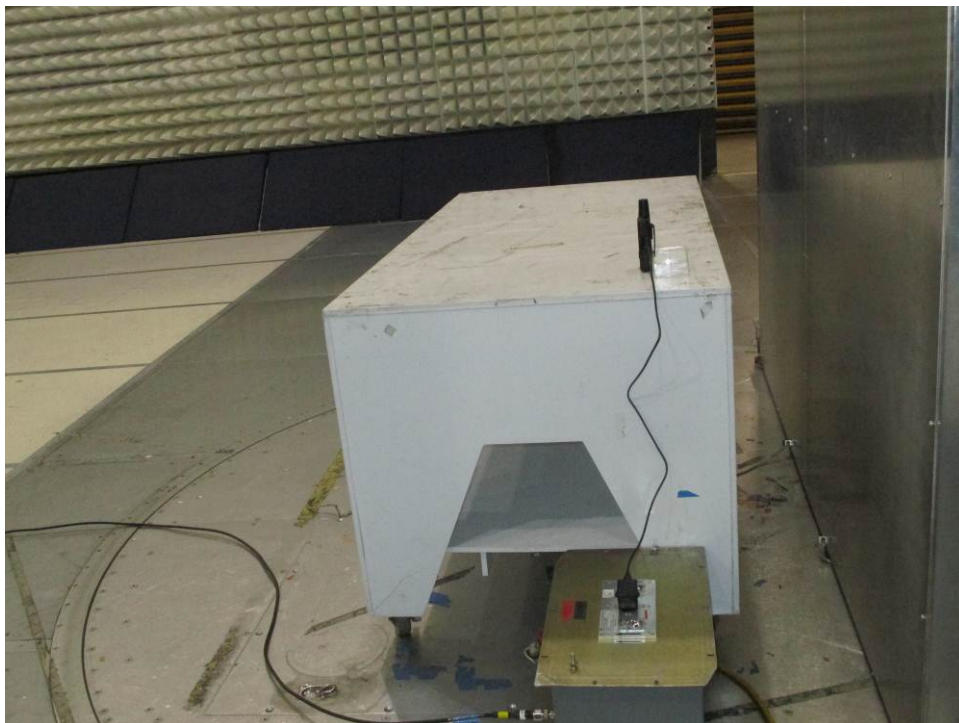
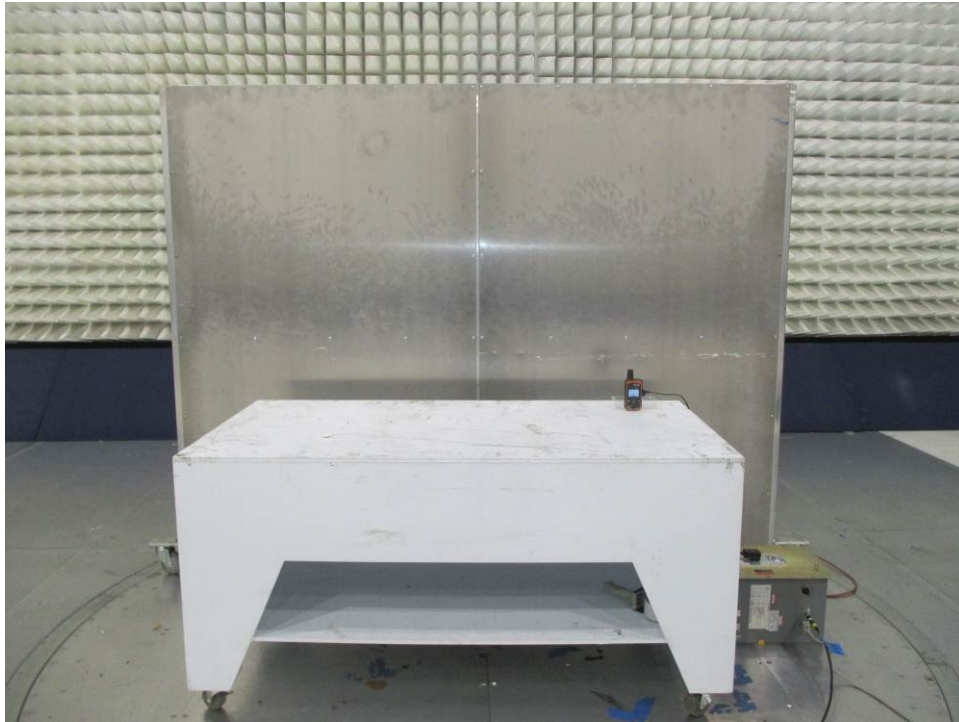
| Frequency | Av Level | QP Level | Av Limit | QP Limit | Av Margin | QP Margin |
|-----------|----------|----------|----------|----------|-----------|-----------|
| MHz       | dBuV     | dBuV     | dBuV     | dBuV     | dB        | dB        |
| 0.428     | 32.6     | 42.4     | 48.1     | 58.1     | -15.5     | -15.7     |
| 0.535     | 20.3     | 30.0     | 46       | 56       | -25.7     | -26.0     |
| 0.783     | 23.9     | 33.5     | 46       | 56       | -22.1     | -22.5     |
| 0.854     | 21.0     | 33.6     | 46       | 56       | -25.0     | -22.4     |
| 1.117     | 19.4     | 29.9     | 46       | 56       | -26.6     | -26.1     |
| 1.144     | 18.8     | 29.5     | 46       | 56       | -27.2     | -26.5     |
| 1.257     | 22.0     | 32.2     | 46       | 56       | -24.0     | -23.8     |
| 1.607     | 21.9     | 31.4     | 46       | 56       | -24.1     | -24.6     |
| 2.457     | 19.9     | 29.3     | 46       | 56       | -26.1     | -26.7     |
| 2.822     | 19.0     | 29.2     | 46       | 56       | -27.0     | -26.8     |

**Results:** Complies by 8.3dB at 100VAC 50Hz.



## 3.2.4 Test Configuration Photographs

**The following photographs** show the testing configurations used.



*Electromagnetic Conducted Disturbance Setup Photograph*

### 3.3 Line Conducted Disturbance at the Telecommunication Ports

#### 3.3.1 Test Limits

**Table 3.3-1a EN 55022**

**Limits for Conducted Disturbance at the Signal Lines, for Class A Equipment**

| Frequency (MHz) | Limits (dB $\mu$ V) |          | Limits (dB $\mu$ A) |          |
|-----------------|---------------------|----------|---------------------|----------|
|                 | Quasi-Peak          | Average  | Quasi-Peak          | Average  |
| 0.15 to 0.50    | 97 to 87            | 84 to 74 | 53 to 43            | 40 to 30 |
| 0.5 to 30.0     | 87                  | 74       | 43                  | 30       |

Note: The limits decrease linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

Note: The lower limit shall apply at the transition frequency.

**Table 3.3-1b EN 55022**

**Limits for Conducted Disturbance at the Signal Lines, for Class B Equipment**

| Frequency (MHz) | Limits (dB $\mu$ V) |          | Limits (dB $\mu$ A) |          |
|-----------------|---------------------|----------|---------------------|----------|
|                 | Quasi-Peak          | Average  | Quasi-Peak          | Average  |
| 0.15 to 0.50    | 84 to 74            | 74 to 64 | 40 to 30            | 30 to 20 |
| 0.5 to 30.0     | 74                  | 64       | 30                  | 20       |

Note: The limits decrease linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

Note: The lower limit shall apply at the transition frequency.

Not Applicable The EUT does not contain any Telecommunications cables.

#### **4.0 Labeling And Instruction Manual Requirements (For Reference Only)**

##### **USA**

Use following link for FCC labeling and instruction requirements:

<http://www.ecfr.gov/cgi-bin/text-idx?SID=926949ae5e109309ca21a4982a4dda33&node=47:1.0.1.1.16&rgn=div5#47:1.0.1.1.16.1.236.10>

## Canada

The manufacturer, importer or supplier shall meet the labeling requirements set out in this section for every ITE unit<sup>1</sup>.

- (i) Prior to marketing in Canada, for ITE manufactured in Canada, and;
- (ii) Prior to importation into Canada, for imported ITE.

The presence of the label on the ITE represents the manufacturer's or importer's Self-Declaration of Compliance (SDoC) to Industry Canada ICES-003. Each unit of an ITE model shall bear a label indicating the model's compliance with ICES-003.

The label shall be permanently affixed to the ITE or displayed electronically and its text must be clearly legible. When the dimension of the device is too small or it is otherwise not practical to place the label on the ITE, the label shall be placed in a prominent location in the user manual supplied with the ITE. The user manual may be in an electronic format and must be readily available.

**Industry Canada ICES-003 Compliance Label:**

**CAN ICES-3 (\*)/NMB-3(\*)**

**\* Insert either "A" or "B" but not both to identify the applicable Class of ITE.**

<sup>1</sup> The labeling requirements apply to new models. Existing models may continue with the requirements in Issue 4 or adopt the requirements in Issue 5.

## EN 55022

Class A ITE is a category of all other ITE, which satisfies the Class A ITE limits but not the Class B ITE limits. Such equipment should not be restricted in its sale but the following warning shall be included in the instructions for use:

**Warning**

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

## CISPR 22

Class A ITE is a category of all other ITE which satisfies the class A ITE limits but not the class B ITE limits. Such equipment should not be restricted in its sale but the following warning shall be included in the instructions for use:

**Warning**

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

## **Australia**

Use a following link from “The Australian Communications and Media Authority (the ACMA)” for the labeling requirements:

<http://www.acma.gov.au/webwr/assets/main/lib310037/summary%20of%20labelling%20requirements%20-%20fs89.pdf>

## Japan (VCCI)

The Regular Member shall put the following statement on a Class A ITE or Class B ITE, as reported.

- (1) Class A ITE shall have the following message on a visible location on each product. In the event that direct labeling is difficult, a tag may be used.

この装置は、クラスA情報技術装置です。この装置を家庭環境で使用する  
と電波妨害を引き起こすことがあります。この場合には使用者が適切な対策  
を講ずるよう要求されることがあります。 **VCCI- A**

Translation:

This is a Class A product.

In a domestic environment this product may cause radio interference, in which case the user may be required to take corrective actions. **VCCI-A**

Note 1: The characters shall not be less than 2 mm high. If adequate space is unavailable, The character size may be reduced as long as the characters are readable.

Note 2: VCCI-A means that the equipment satisfies the limits of interference for Class A ITE.

- (2) Class B ITE  
A Class B ITE shall have the following label in a visible location on each product.



## 5.0 Document History

| Revision/ Job Number | Writer Initials | Reviewer Initials | Date           | Change            |
|----------------------|-----------------|-------------------|----------------|-------------------|
| 1.0 / G102019500     | AS              | KV                | March 20, 2015 | Original document |