

Date of Test: November 1 to 3, 2006

FCC ID: UPWWSD2006

**TEST REPORT****Report Number: 3106452LAX-002****Project Number: 3106452****November 8, 2006****Testing performed on the  
Wireless Automated Liftslide Controller****FCC ID: UPWWSD2006****Model: WSD2006****to****FCC Part 15.249****For  
Weiland Sliding Doors**

A2LA Certificate Number: 2085-01

Test Performed by:

Intertek

27611 La Paz Road., Suite C  
Laguna Niguel, CA 92677

Test Authorized by:

Weiland Sliding Doors

2601 Industry Street  
Oceanside, CA 92054

Prepared by:

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Sergey MarkerDate: November 8, 2006

Reviewed by:

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Ollie MoyrongDate: November 8, 2006

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**1.0 Summary of Test Results**

| FCC RULE     | DESCRIPTION OF TEST                                    | RESULT   | PAGE   |
|--------------|--------------------------------------------------------|----------|--------|
| 15.249a      | Field Strength of fundamental                          | Complies | 11     |
| 15.249a      | Field Strength of harmonics                            | Complies | 11     |
| 15.249c      | Radiated emissions outside the band, except harmonics. | Complies | 19     |
| 15.203       | Antenna requirement                                    | Complies | 29     |
| 15.107 / 207 | Line Conducted Emissions                               | Complies | 31     |
| 15.109 / 209 | Radiated Emission                                      | Complies | 14, 18 |

*We attest to the accuracy of this report:*

EMC Department

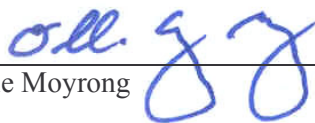
Date of issue: November 8, 2006

Test Engineer:



Sergey Marker

Reviewing Engineer:



Ollie Moyrong

Date of Test: November 1 to 3, 2006

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**2.0 General Description****2.1 Product Description***EQUIPMENT UNDER TEST***Type of equipment** Wireless Automated Liftslide Controller**Type/Model** WSD2006

## RF Transceiver:

- Type of Emission: F3F
- Frequency: 915 MHz ISM Band
- Output Power: 0 dBm
- Modulation: FSK
- Range: 150 feet
- Antennas: Compact center-feed dipole antenna with RP-SMA connector
- Batteries: Panasonic AA NiMH 24V 20 cells- HHR-210AAB2B 2100mAH
- Battery Charger: 0.9 A, 35 watt

**Manufacturer** Weiland Sliding Doors  
2601 Industry Street  
Oceanside, CA 92054**Tested by request of** Mr. Brad Mickelson  
Tel: (760) 722-8828  
Fax: (760) 722-8838**Standards:** FCC Part 15.249**Test Report No.** 3106452LAX-002**FCC ID:** UPWWSD2006

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## 2.2 Related Submittal(s) Grants

This report is for use with an application for certification of a low power transmitter. One transmitter is included in the application. This specific report details the emission characteristics of transmitter.

## 2.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2003). Radiated emission measurements were performed in 10 m OATS. All Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the **"Justification Section"** of this Application.

## 2.4 Test Facility

The test facility was a specially designed and constructed Open Area Test Site (OATS).

The test site consists of a metal ground plane constructed of 22-gauge sheet metal. The site contains a 2.5 meter diameter turntable for floor standing equipment, and a fiber glass table measuring 1.5 x 1.5 x 0.8 meters for table top equipment. To facilitate testing, the site also has heat and air conditioning systems to control environmental test conditions.

This test facility and site measurement data have been fully placed on file with the FCC, Industry of Canada and A2LA accredited.

Test Facility: Intertek ETL Semko  
27611 La Paz Road, Suite C  
Laguna Niguel, CA 92677

### Accreditations:

FCC Registration Number: 90711  
A2LA Certificate Number: 2085-01  
IC Reference Number: IC 3753

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### **3.0 System Test Configuration**

#### **3.1 Justification**

For emission testing, the equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). During testing, all cables were manipulated to produce worst case emissions.

For the measurements, the EUT is attached to a cardboard box (if necessary) and placed on the fiber glass table. If the EUT attaches to peripherals, they are connected and operational (as typical as possible). The EUT is wired to transmit full power.

The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters.

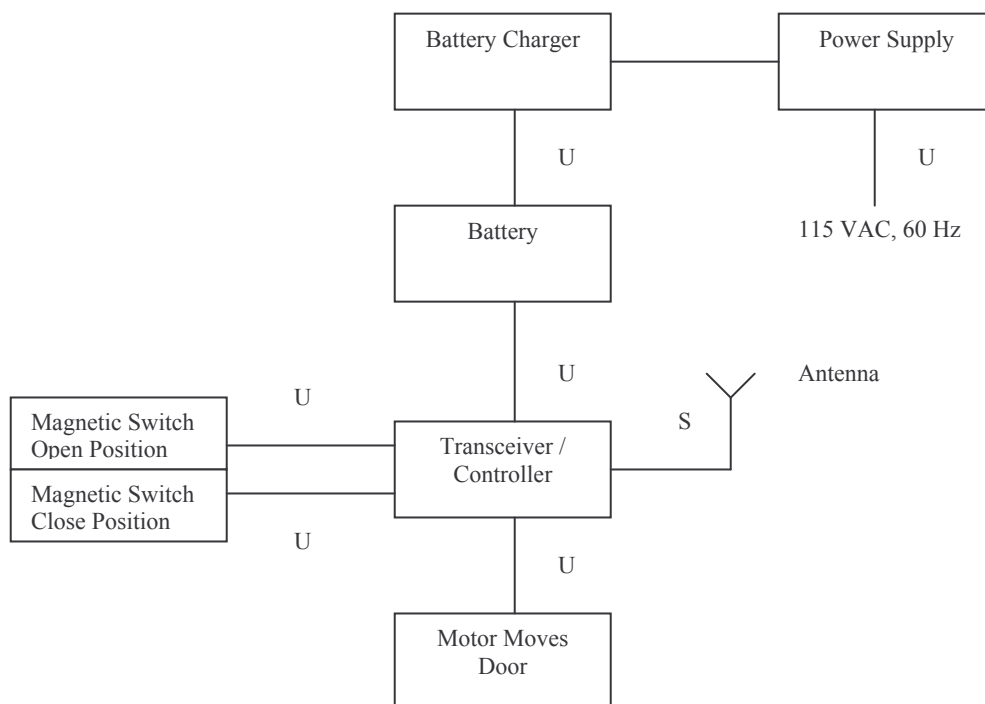
Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance. All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance.

#### **3.2 EUT Exercising Software**

Customer provided temporary made software to be able to switch between standby and CW mode for testing purpose. No software was required to exercise the EUT.

### 3.3 System Test Configuration

#### 3.3.1 Block Diagram of Test Setup



|                    |                      |                             |
|--------------------|----------------------|-----------------------------|
| <b>S:</b> Shielded | <b>U:</b> Unshielded | <b>F:</b> With Ferrite Core |
|--------------------|----------------------|-----------------------------|

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## 3.3.2 EUT is a wireless sliding door controller

| EUT                      |                   |                                       |          |            |
|--------------------------|-------------------|---------------------------------------|----------|------------|
| Equipment                | Manufacturer      | Model #                               | S/N #    | FCC ID     |
| Transceiver / Controller | Weiland           | WSD2006                               | N/A      | UPWWSD2006 |
| Antenna                  | Linx Technologies | ANT-DB1-VDP-RPS                       | N/A      | N/A        |
| Battery                  | Panasonic         | AA NiMH 24V<br>20 cells- HHR-210AAB2B | N/A      | N/A        |
| Battery Charger          | Energy Access     | ICS-1002                              | 52492    | N/A        |
| Power Supply             | Energy Access     | SPU130-III                            | 02009453 | N/A        |
| Magnetic Switch (open)   | N/A               | N/A                                   | N/A      | N/A        |
| Magnetic Switch (close)  | N/A               | N/A                                   | N/A      | N/A        |
| Motor Moves Door         | PennEngineering   | GM8724S021-R1                         | N/A      | N/A        |

## 3.3.3 Support Equipment

| Support Equipment |              |         |       |        |
|-------------------|--------------|---------|-------|--------|
| Equipment         | Manufacturer | Model # | S/N # | FCC ID |
| None              |              |         |       |        |

## 3.4 Equipment Modification

In order to pass a radiated emission test from digital part of controller the Switching power DC to DC converter was replaced with a linear converter.

## 3.5 Mode(s) of operation

The EUT was powered from fully charged batteries. When the door is closed, the batteries are being charged from the battery charger. Regardless of the position of the door, the EUT always receives power from the batteries. During the tests EUT was operating in continuous transmitting mode.

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**4.0 Field Strength of Emission****4.1 Test Description**

|                   |                     |
|-------------------|---------------------|
| Parameter:        | FCC 15.249a         |
| Requirement:      | FCC 15.249a         |
| Fundamental:      | Limit 94 dB $\mu$ V |
| <b>Harmonics:</b> | Limit 54 dB $\mu$ V |

**4.1.1 Test Procedure**

For the measurements, the EUT is attached to a cardboard box (if necessary) and placed on the wooden turntable which is 0.8 m above the ground plane on the open test site. If the EUT attaches to peripherals, they are connected and operational (as typical as possible). The EUT is wired to transmit full power. The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance. All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Radiated emission measurements were performed from 30 MHz to the 10<sup>th</sup> harmonic of transmitter frequency. Analyzer resolution is 120 KHz for 30 to 1000 MHz, 1 MHz for >1000 MHz. This test was performed per test procedure specified in ANSI C63.4 (2003).

**4.1.2 Field Strength Calculation**

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with antennas, cables, preamplifiers (if any) and average factors (when specified limits is in average and measurements are made with peak detectors) The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG + AV$$

where FS = Field Strength in dB( $\mu$ V/m)

RA = Receiver Amplitude in dB( $\mu$ V)

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB/m

AG = Amplifier Gain in dB

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

$$RA = 52 \text{ dB}(\mu\text{V})$$

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

$$AF = 7.4 \text{ dB/m}$$

$$AG = 29 \text{ dB}$$

$$FS = 52 + 7.4 + 1.6 - 29 = 32 \text{ dB}(\mu\text{V/m})$$

This value in dB( $\mu$ V/m) was converted to its corresponding level in  $\mu$ V/m.

Level in  $\mu$ V/m = Common Antilogarithm  $\{[32 \text{ dB}(\mu\text{V/m})]/20\} = 39.8 \mu\text{V/m}$

**Note:** In the following table(s), the level shown on the data table includes the antenna factor, cable factor and preamplifier gain.

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## 4.1.3 Radiated Emission Data

**Standard:** FCC Part 15.249a**Company:** Weiland Sliding Doors.**Job No.** 3106452LAX-002**Model Name:** WSD2006**Distance:** 3 m

Measurement Uncertainty: 3.92dB

Temperature: 24°C

Relative Humidity: 49 %

| Frequency | Detector | Vertical level | Horizontal level | D.C.F. | Limit    | Margin |
|-----------|----------|----------------|------------------|--------|----------|--------|
| MHz       |          | (dBuV/m)       | (dBuV/m)         | dB     | (dBuV/m) | (dB)   |
| 915       | Q.Peak   | 74.5           | 90.2             | 0.0    | 94.0     | -3.8   |
| 1830      | Peak     | 54.7           | 58.1             | 0.0    | 74.0     | -15.9  |
| 1830      | Ave      | 48.5           | 52.4             | 0.0    | 54.0     | -1.6   |
| *2745     | Peak     | 47.0           | 46.1             | 0.0    | 74.0     | -27.0  |
| *2745     | Ave.     | 33.1           | 32.7             | 0.0    | 54.0     | -20.9  |
| *3660     | Peak     | 49.5           | 49.4             | 0.0    | 74.0     | -24.5  |
| *3660     | Ave.     | 35.2           | 35.2             | 0.0    | 54.0     | -18.8  |
| *4575     | Peak     | 51.1           | 50.6             | 0.0    | 74.0     | -22.9  |
| *4575     | Ave.     | 36.4           | 36.1             | 0.0    | 54.0     | -17.6  |
| 5490      | Peak     | 52.4           | 52.8             | 0.0    | 74.0     | -21.2  |
| 5490      | Ave.     | 38.0           | 38.1             | 0.0    | 54.0     | -15.9  |
| 6405      | Peak     | 53.8           | 54.1             | 0.0    | 74.0     | -19.9  |
| 6405      | Ave.     | 39.6           | 39.7             | 0.0    | 54.0     | -14.3  |
| *7320     | Peak     | 54.3           | 52.9             | 0.0    | 74.0     | -19.7  |
| *7320     | Ave.     | 42.1           | 41.4             | 0.0    | 54.0     | -11.9  |
| *8235     | Peak     | 55.0           | 54.9             | 0.0    | 74.0     | -19.0  |
| *8235     | Ave.     | 43.3           | 43.0             | 0.0    | 54.0     | -10.7  |
| *9150     | Peak     | 57.5           | 57.8             | 0.0    | 74.0     | -16.2  |
| *9150     | Ave.     | 46.2           | 45.5             | 0.0    | 54.0     | -7.8   |

**Notes:**

- The field strength shown in the table (Vertical and Horizontal levels) included Antenna factor, Cable loss and Pre-amplifier Gain (if applicable).
- Negative signs (-) in Margin column signify levels below the limits.
- For frequencies below 1000 MHz the, above limits are based on quasi-peak limits.  
Analyzer setting: RBW =120 KHz, VBW =300 KHz
- For frequencies above 1000 MHz the, above limits are based on average limits.  
Analyzer setting: RBW =1 MHz, VBW =1 MHz

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- e) Peak measurement shown for the compliance with 15.35b (peak measurements of emission shall not exceed the average limits specified above by more than 20 dB).
- f) All other emissions not reported are below the equipment noise floor which is at least 6 dB below the limits.
- g) D.C.F: Distance Correction Factor.
- h) \* Restricted Frequency Band. Only spurious emissions are permitted (15.205).

|                    |                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Test Result</b> | <b>Passed with margin 1.6 dB at 1830 MHz.</b><br>** The measurement 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 high probability that the product tested complies with the specification limit |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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**FCC ID: UPWWSD2006****4.2 Test Description**

|               |                       |
|---------------|-----------------------|
| Parameter:    | FCC 15.109            |
| Requirement:  | FCC 15.109, class B   |
| 30-88 MHz     | 40 dB $\mu$ @ 3 m     |
| 88-216 MHz    | 43.5 dB $\mu$ V @ 3 m |
| 216-960 MHz   | 46 dB $\mu$ V @ 3 m   |
| Above 960 MHz | 54 dB $\mu$ V @ 3 m   |

**4.2.1 Test Procedure**

See section 4.1.1.

**4.2.2 Field Strength Calculation**

See section 4.1.2.

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## 4.2.3 Radiated Emission Data

**Standard:** FCC Part 15, Subpart B (15.109)

Measurement Uncertainty: 3.92dB

**Company:** Weiland Sliding Doors

Temperature: 24°C

**Job No.** 3106452LAX-002

Relative Humidity: 49 %

**Model Name:** WSD2006**Mode:** Standby

Note: EUT was modified. See section 3.4 for details of modification.

| Frequency | Detector | Polarization | Field level | Distance | D.C.F. | Limit    | Margin |
|-----------|----------|--------------|-------------|----------|--------|----------|--------|
| MHz       |          |              | (dBuV/m)    | m        | dB     | (dBuV/m) | (dB)   |
| 36.1      | Q-P      | H            | 31.2        | 3        | 0.0    | 40       | -8.8   |
| 40.1      | Q-P      | H            | 29.0        | 3        | 0.0    | 40       | -11.0  |
| 44.2      | Q-P      | V            | 32.3        | 3        | 0.0    | 40       | -7.7   |
| 50.1      | Q-P      | V            | 34.3        | 3        | 0.0    | 40       | -5.7   |
| 57.5      | Q-P      | V            | 32.9        | 3        | 0.0    | 40       | -7.1   |
| 60.1      | Q-P      | H            | 24.7        | 3        | 0.0    | 40       | -15.3  |
| 66.4      | Q-P      | V            | 31.8        | 3        | 0.0    | 40       | -8.2   |
| 103.7     | Q-P      | H            | 38.4        | 3        | 0.0    | 43.5     | -5.1   |
| 111.0     | Q-P      | V            | 27.3        | 3        | 0.0    | 43.5     | -16.2  |
| *113.2    | Q-P      | H            | 39.8        | 3        | 0.0    | 43.5     | -3.7   |
| 131.3     | Q-P      | V            | 34.0        | 3        | 0.0    | 43.5     | -9.5   |
| 151.7     | Q-P      | H            | 39.7        | 3        | 0.0    | 43.5     | -3.8   |
| 164.0     | Q-P      | H            | 36.4        | 3        | 0.0    | 43.5     | -7.1   |
| 167.4     | Q-P      | V            | 32.6        | 3        | 0.0    | 43.5     | -10.9  |
| 241.0     | Q-P      | H            | 32.8        | 3        | 0.0    | 46       | -13.2  |
| 263.0     | Q-P      | H            | 30.3        | 3        | 0.0    | 46       | -15.7  |

**Notes:**

- The field strength shown in the table for Q-Peak Detector (Vertical and Horizontal levels) includes Antenna factor, Cable loss and Pre-amplifier Gain (if applicable).
- All emissions not reported were at least 20 dB below the limits or noise level of EMI receiver.
- Negative signs (-) in Margin column signify levels below the limits.
- Analyzer setting: RBW  $\geq$  1 MHz, VBW  $\geq$  1 MHz, for freq. > 1 GHz  
RBW  $\geq$  100kHz, VBW  $\geq$  100 kHz, for freq. < 1 GHz  
RBW  $\geq$  1 kHz, VBW  $\geq$  1 kHz for freq. < 150 kHz  
Detector mode: Average (>1 GHz and < 150 kHz) and Quasi-peak (<1 GHz).
- D.C.F: Distance Correction Factor

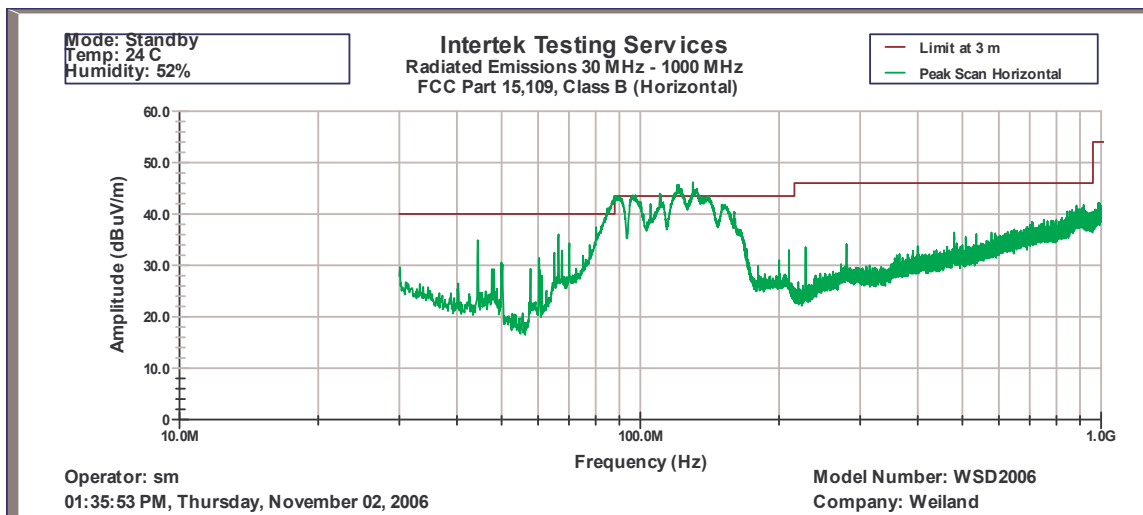
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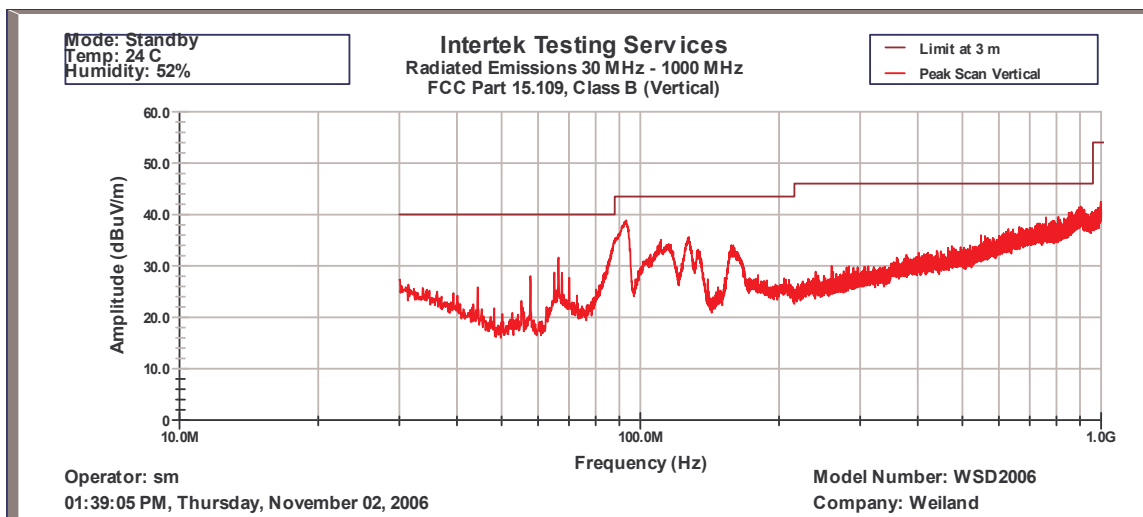
|             |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Result | Passed with 3.7 dB margin at 113.2 MHz after modification. See section 3.4 for details of modification.<br>* The measurement 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 high probability that the product tested complies with the specification limit |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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**Radiated Emission Peaksan, Horizontal Polarization**



**Radiated Emission Peaksan, Vertical Polarization**

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## 4.3 Test Description

|               |                                          |
|---------------|------------------------------------------|
| Parameter:    | FCC 15.209                               |
| Requirement:  | FCC 15.209                               |
| 0.009 – 0.490 | 2400/F (kHz) ( $\mu\text{V/m}$ ) @ 300 m |
| 0.490 – 1.705 | 2400/F (kHz) ( $\mu\text{V/m}$ ) @ 30 m  |
| 1.705 – 30.0  | 29.5 dB $\mu\text{V}$ @ 30 m             |
| 30-88 MHz     | 40 dB $\mu$ @ 3 m                        |
| 88-216 MHz    | 43.5 dB $\mu\text{V}$ @ 3 m              |
| 216-960 MHz   | 46 dB $\mu\text{V}$ @ 3 m                |
| Above 960 MHz | 54 dB $\mu\text{V}$ @ 3 m                |

## 4.3.1 Test Procedure

See section 4.1.1.

## 4.3.2 Field Strength Calculation

See section 4.1.2.

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## 4.3.3 Radiated Emission Data

**Standard:** FCC Part 15, Subpart C (15.209)

Measurement Uncertainty: 3.92dB

**Company:** Weiland Sliding Doors

Temperature: 24°C

**Job No.** 3106452LAX-002

Relative Humidity: 49 %

**Model Name:** WSD2006**Mode:** Transmitting

| Frequency | Detector | Polarization | Field level | Distance | D.C.F. | Limit    | Margin |
|-----------|----------|--------------|-------------|----------|--------|----------|--------|
| MHz       |          |              | (dBuV/m)    | m        | dB     | (dBuV/m) | (dB)   |
| 405.0     | Q-P      | H            | 26.0        | 3        | 0.0    | 46       | -20.0  |
| 875.2     | Q-P      | H            | 36.3        | 3        | 0.0    | 46       | -9.7   |
| 895.2     | Q-P      | H            | 40.5        | 3        | 0.0    | 46       | -5.5   |
| 905.1     | Q-P      | H            | 40.2        | 3        | 0.0    | 46       | -5.8   |
| *935.0    | Q-P      | H            | 43.1        | 3        | 0.0    | 46       | -2.9   |
| 955.0     | Q-P      | H            | 40.1        | 3        | 0.0    | 46       | -5.9   |

**Notes:**

- The field strength shown in the table for Q-Peak Detector (Vertical and Horizontal levels) included Antenna factor, Cable loss and Pre-amplifier Gain (if applicable).
- All emissions not reported were at least 20 dB below the limits or noise level of EMI receiver
- Negative signs (-) in Margin column signify levels below the limits.
- Analyzer setting:
  - RBW  $\geq$  1 MHz, VBW  $\geq$  1 MHz, for freq. > 1 GHz
  - RBW  $\geq$  100 kHz, VBW  $\geq$  100 kHz, for freq. < 1 GHz
  - RBW  $\geq$  1 kHz, VBW  $\geq$  1 kHz for freq. < 150 kHz
 Detector mode: Average (>1 GHz and < 150 kHz) and Quasi-peak (<1 GHz).
- D.C.F: Distance Correction Factor

|             |                                                                                                                                                                                                                                                                                                                                                                     |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Result | Passed with 2.9 dB margin at 935 MHz.<br>* The measurement 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 high probability that the product tested complies with the specification limit |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Date of Test: November 1 to 3, 2006

FCC ID: UPWWS2006

**5.0 Out of Band Emission****5.1 Test Description**

|                    |                       |
|--------------------|-----------------------|
| Parameter:         | FCC 15.249c           |
| Requirement:       | FCC 15.249c           |
| Attenuation limits | > 50 dB or FCC 15.209 |

**5.2 Test Procedure**

These measurements performed inside the semi anechoic chamber. For measurements below 1 GHz, a biconilog antenna was used. For measurements above 1 GHz, a horn antenna was used. Several plots were made to show emissions from 30 MHz up to 7<sup>th</sup> harmonic.

**5.3 Test Results**

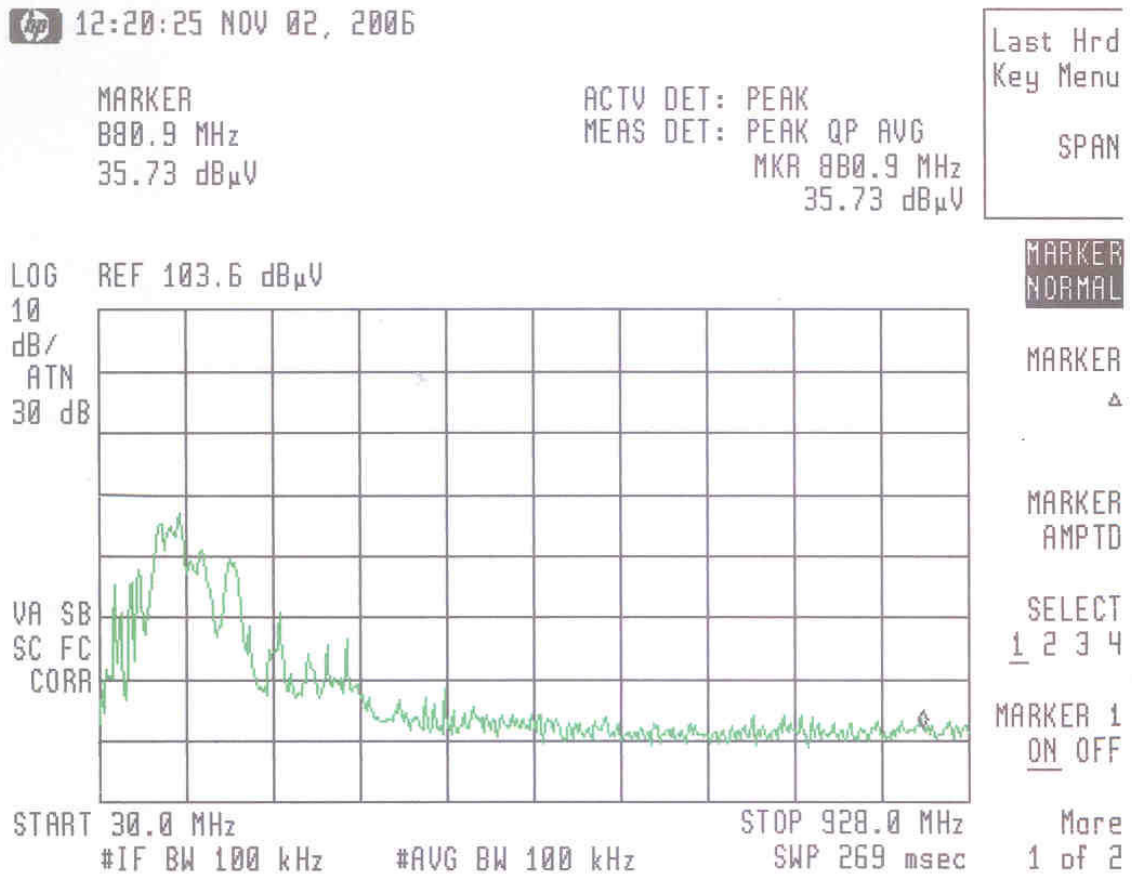
The following plots show the relative spurious emission levels of the transmitter.

| Plot # | Description                                                                                                                                                                                 |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5.3.1  | Plot shows peakscan from 30 to 928 MHz in Standby mode. This scan shown for comparison with Transmitting mode.                                                                              |
| 5.3.2  | Plot shows peak measurements differential between fundamental and frequency range from 30 to 928 MHz. Complies with >50 dB, except frequencies, which comply with 15.209 (see section 4.3). |
| 5.3.3  | Plot shows peak measurements differential between fundamental @ 915 MHz and lower edge of the frequency band. Complies with >50 dB.                                                         |
| 5.3.4  | Plot shows peak measurements differential between fundamental @ 915 MHz and upper edge of the frequency band. Complies with >50 dB.                                                         |
| 5.3.5  | Plot shows frequencies, which do not comply with 50 dB, but comply with 15.209 (see section 4.3)                                                                                            |
| 5.3.6  | Plot shows frequencies, which do not comply with 50 dB, but comply with 15.209 (see section 4.3)                                                                                            |
| 5.3.7  | Plot shows peak measurements differential between fundamental and frequency range from 902 to 2000 MHz. Complies with >50 dB.                                                               |
| 5.3.8  | Plot shows no spurious emission from 2000 to 3000 MHz. It also shows compliance with 50 dB below the level of fundamental (complies with >50 dB)                                            |
| 5.3.9  | Plot shows no spurious emission from 3000 to 6500 MHz. It also shows compliance with 50 dB below the level of fundamental (complies with >50 dB)                                            |

**Note 1:** There are no emissions observed above 3rd harmonic of fundamental frequency. All spurious emissions outside the frequency band 902 – 928 MHz are attenuated by more than 50 dB below the level of fundamental or below the limits specified in 15.209

Date of Test: November 1 to 3, 2006

FCC ID: UPWWS2006



Plot 5.3.1

Date of Test: November 1 to 3, 2006

FCC ID: UPWWS2006

12:18:15 NOV 02, 2006

MARKER  $\Delta$   
-40.4 MHz  
-52.80 dB

ACTV DET: PEAK  
MEAS DET: PEAK QP AVG  
MKR  $\Delta$  -40.4 MHz  
-52.80 dB

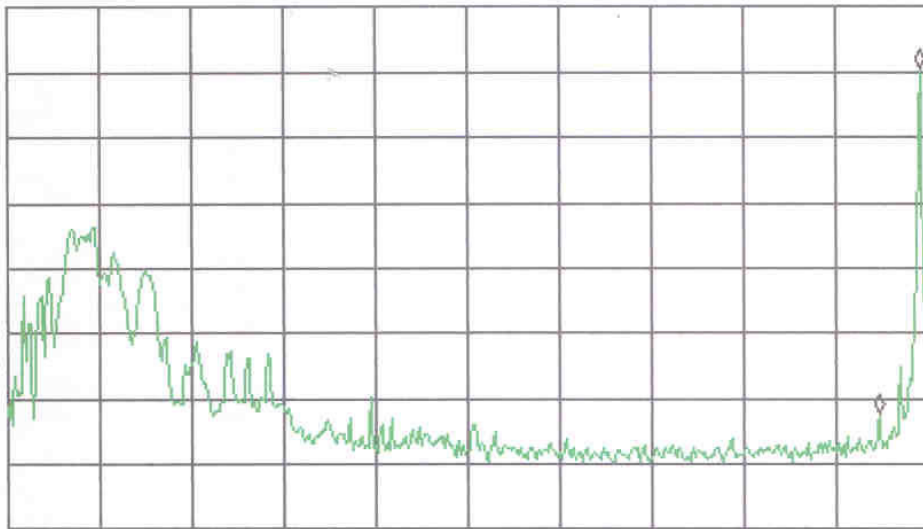
Last Hrd  
Key Menu

SPAN

LOG REF 103.6 dB $\mu$ V

10  
dB/  
ATN  
30 dB

VA SB  
SC FC  
CORR



START 30.0 MHz STOP 928.0 MHz  
#IF BW 100 kHz #AVG BW 100 kHz SWP 269 msec

MARKER  
 $\Delta$  CF

MARKER  
 $\Delta$

NEXT  
PEAK

NEXT PK  
RIGHT

NEXT PK  
LEFT

More  
1 of 2

Plot 5.3.2

Date of Test: November 1 to 3, 2006

FCC ID: UPWWS2006

12:26:07 NOV 02, 2006

MARKER  $\Delta$   
-13.20 MHz  
-55.79 dB

ACTV DET: PEAK  
MEAS DET: PEAK QP AVG  
MKR  $\Delta$  -13.20 MHz  
-55.79 dB

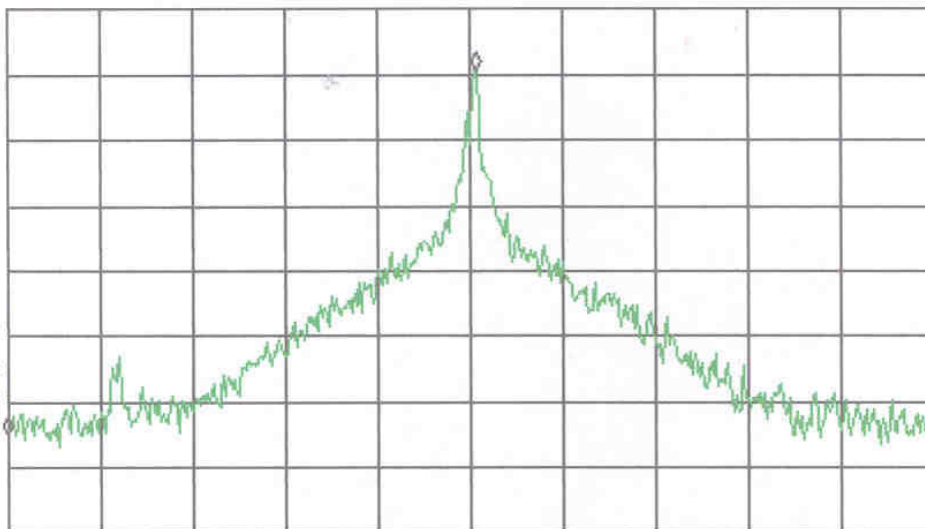
Last Hrd  
Key Menu

SPAN

LOG REF 103.6 dB $\mu$ V

10  
dB/  
ATN  
30 dB

VA SB  
SC FC  
CORR



START 902.26 MHz

#IF BW 100 kHz

#AVG BW 100 kHz

STOP 928.26 MHz

SWP 20.0 msec

MARKER  
 $\Delta$  CF

MARKER  
 $\Delta$

NEXT  
PEAK

NEXT PK  
RIGHT

NEXT PK  
LEFT

More  
1 of 2

Plot 5.3.3

Date of Test: November 1 to 3, 2006

FCC ID: UPWWS2006

12:27:21 NOV 02, 2006

MARKER  $\Delta$   
12.81 MHz  
-51.16 dB

ACTV DET: PEAK  
MEAS DET: PEAK QP AVG  
MKR  $\Delta$  12.81 MHz  
-51.16 dB

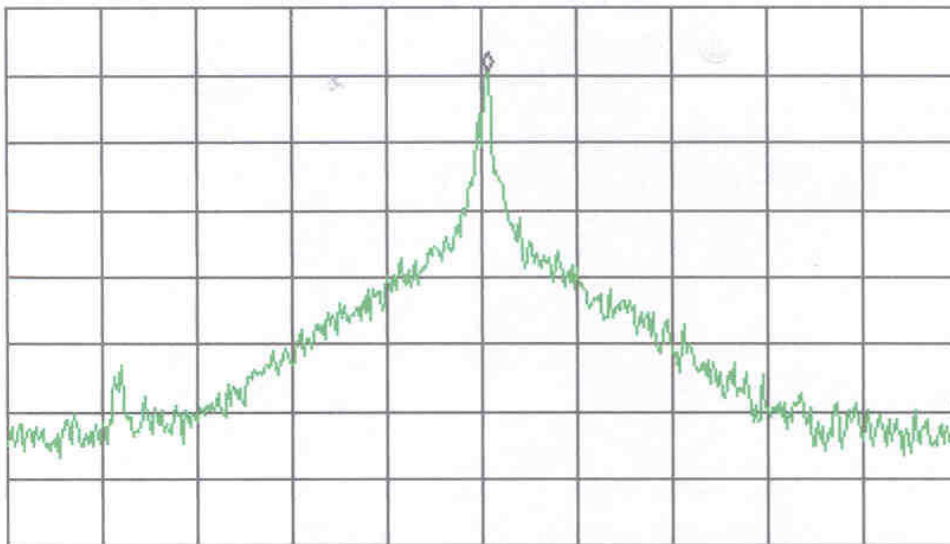
Last Hrd  
Key Menu

SPAN

LOG REF 103.6 dB $\mu$ V

10  
dB/  
ATN  
30 dB

VA SB  
SC FC  
CORR



START 902.26 MHz

#IF BW 100 kHz

#AVG BW 100 kHz

STOP 928.26 MHz

SWP 20.0 msec

MARKER  
 $\Delta$  CF

MARKER  
 $\Delta$

NEXT  
PEAK

NEXT PK  
RIGHT

NEXT PK  
LEFT

More  
1 of 2

Plot 5.3.4

Date of Test: November 1 to 3, 2006

FCC ID: UPWWS2006

12:43:34 NOV 02, 2006

MARKER  $\Delta$   
-40.3 MHz  
-52.01 dB

ACTV DET: PEAK  
MEAS DET: PEAK QP AVG  
MKR  $\Delta$  -40.3 MHz  
-52.01 dB

Last Hrd  
Key Menu

SPAN

LOG REF 103.6 dB $\mu$ V

10  
dB/  
ATN  
30 dB

VA SB  
SC FC  
CORR

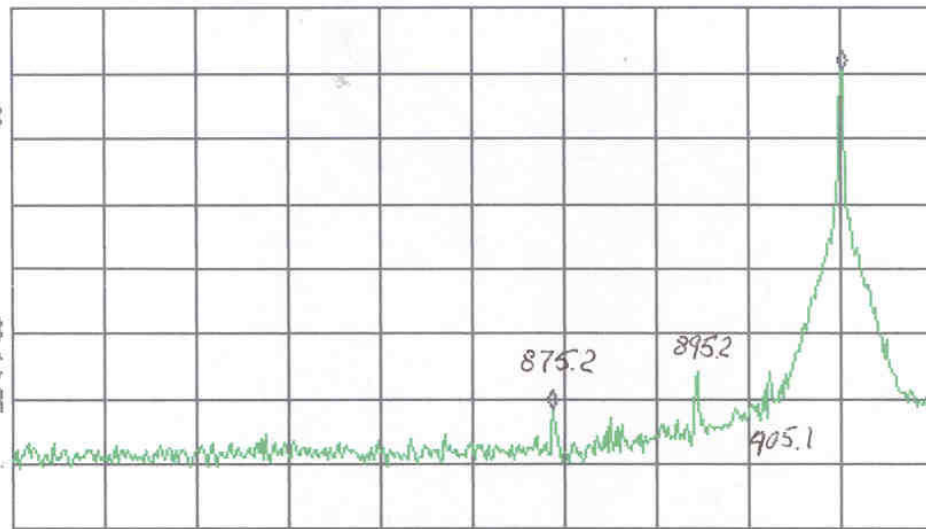
START 800.0 MHz

#IF BW 100 kHz

#AVG BW 100 kHz

STOP 928.0 MHz

SWP 3B.4 msec



MARKER  
 $\Delta$  CF

MARKER  
 $\Delta$

NEXT  
PEAK

NEXT PK  
RIGHT

NEXT PK  
LEFT

More  
1 of 2

Plot 5.3.5

Date of Test: November 1 to 3, 2006

FCC ID: UPWWS2006

13:06:47 NOV 02, 2006

MARKER  $\Delta$   
40.17 MHz  
-46.50 dB

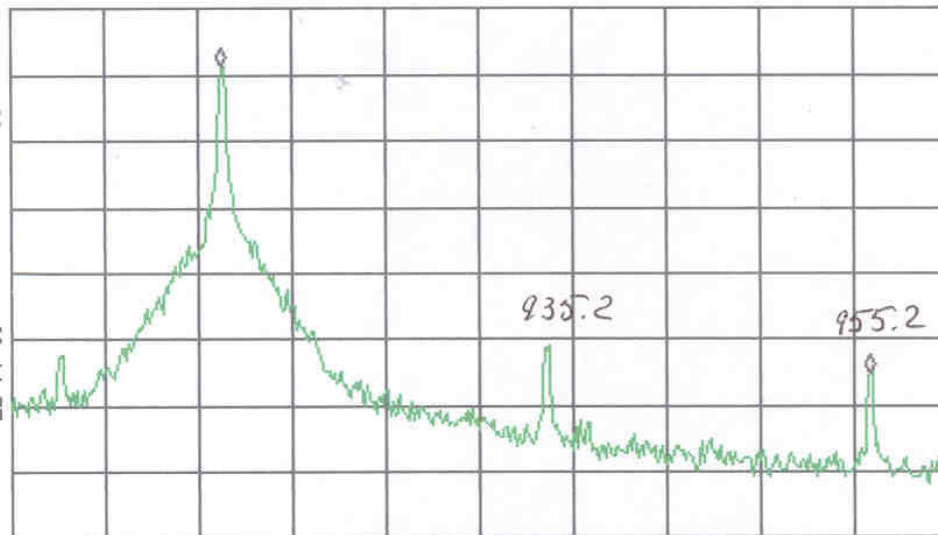
ACTV DET: PEAK  
MEAS DET: PEAK QP AVG  
MKR  $\Delta$  40.17 MHz  
-46.50 dB

Last Hrd  
Key Menu  
SPAN

LOG REF 111.0 dB $\mu$ V

10  
dB/  
ATN  
30 dB

VA SB  
SC FC  
CORR



START 902.00 MHz

#IF BW 100 kHz

#AVG BW 100 kHz

STOP 960.00 MHz

SWP 20.0 msec

MARKER  
 $\Delta$  CF

MARKER

NEXT  
PEAK

NEXT PK  
RIGHT

NEXT PK  
LEFT

More  
1 of 2

Plot 5.3.6

Date of Test: November 1 to 3, 2006

FCC ID: UPWWS2006

12:54:52 NOV 02, 2006

MARKER  $\Delta$   
60 MHz  
-50.34 dB

ACTV DET: PEAK  
MEAS DET: PEAK QP AVG  
MKR  $\Delta$  60 MHz  
-50.34 dB

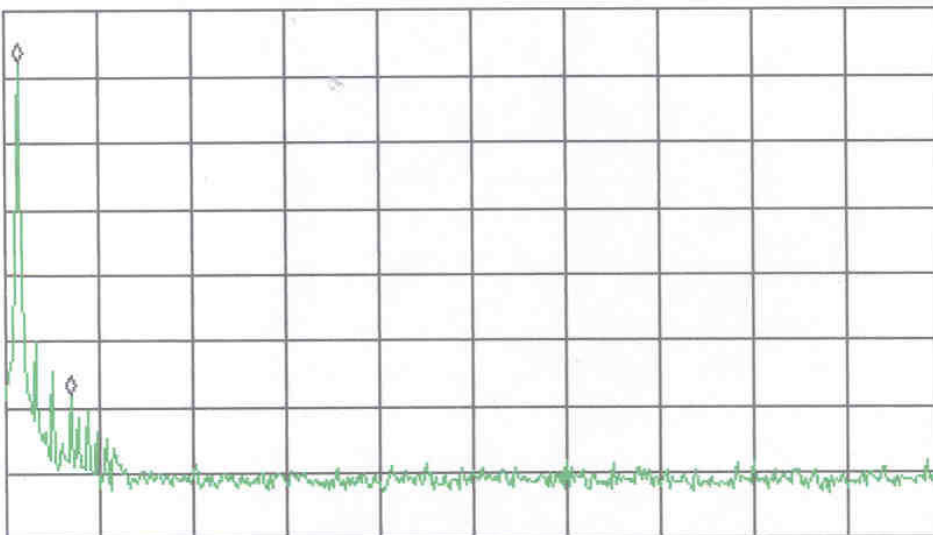
Last Hrd  
Key Menu

SPAN

LOG REF 109.6 dB $\mu$ V

10  
dB/  
ATN  
30 dB

VA SB  
SC FC  
CORR



START 902 MHz

#IF BW 100 kHz

#AVG BW 100 kHz

STOP 2.000 GHz

SWP 329 msec

MARKER  
NORMAL

MARKER  
 $\Delta$

MARKER  
AMPTD

SELECT  
1 2 3 4

MARKER 1  
ON OFF

More  
1 of 2

Plot 5.3.7

Date of Test: November 1 to 3, 2006

FCC ID: UPWWS2006

13:10:08 NOV 02, 2006

MARKER  
2.8200 GHz  
42.72 dBμV

ACTV DET: PEAK  
MEAS DET: PEAK QP AVG  
MKR 2.8200 GHz  
42.72 dBμV

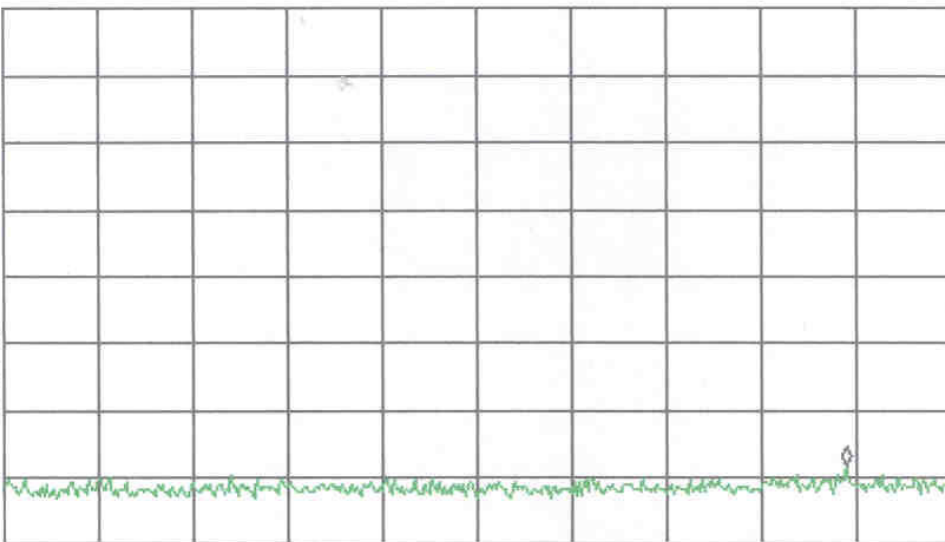
Last Hrd  
Key Menu

SPAN

LOG REF 111.0 dBμV

10  
dB/  
ATN  
30 dB

VA SB  
SC FC  
CORR



START 2.0000 GHz

#IF BW 100 kHz

#AVG BW 100 kHz

STOP 2.9214 GHz

SWP 276 msec

MARKER  
CF

MARKER  
Δ

NEXT  
PEAK

NEXT PK  
RIGHT

NEXT PK  
LEFT

More  
1 of 2

Plot 5.3.8

Date of Test: November 1 to 3, 2006

FCC ID: UPWWSD2006

15:05:02 NOV 03, 2006

REF LEVEL  
110.0 dBμV

ACTV DET: PEAK  
MEAS DET: PEAK QP AVG  
MKR 3.245 GHz  
46.74 dBμV

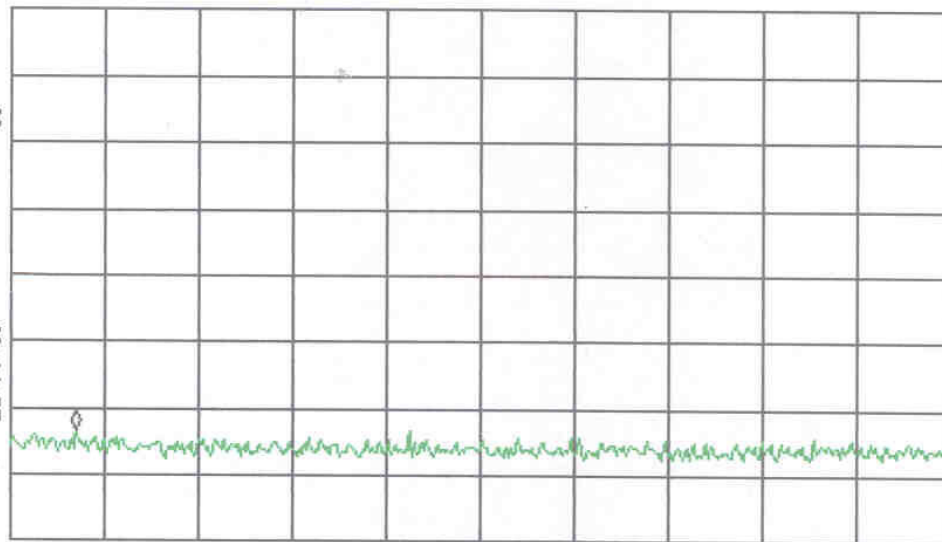
Last Hrd  
Key Menu

SPAN

LOG REF 110.0 dBμV

10  
dB/  
ATN  
20 dB

VA SB  
SC FC  
CORR



START 3.000 GHz

#IF BW 100 kHz

#AVG BW 100 kHz

STOP 6.500 GHz

SWP 1.05 sec

MARKER  
↓ CF

MARKER  
Δ

NEXT  
PEAK

NEXT PK  
RIGHT

NEXT PK  
LEFT

More  
1 of 2

Plot 5.3.9

Date of Test: November 1 to 3, 2006

**FCC ID: UPWWSD2006****6.0 Antenna Requirement****6.1 Test description**

|               |                                                                                         |
|---------------|-----------------------------------------------------------------------------------------|
| Parameter:    | FCC 15.203                                                                              |
| Requirement:  | FCC 15.203                                                                              |
| Descriptions: | No antenna other than furnished by the responsible party shall be used with the device. |

**6.2 Test Procedure**

None

**6.3 Test Result**

The device is considered to comply with the requirements by:

|   |                                                                                                                                                                                                     |
|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   | Description                                                                                                                                                                                         |
|   | The transmitter uses a permanently connected antenna.                                                                                                                                               |
| X | The antenna is affixed to the EUT using a unique Reverse SMA (RP-SMA) connector which allows for replacement of a broken antenna, but does NOT use a standard antenna jack or electrical connector. |

Date of Test: November 1 to 3, 2006

FCC ID: UPWWSD2006

## 7.0 Line Conducted Emission

### 7.1 Test Description

| Parameter:      | FCC 15.107, 15.207          |                         |
|-----------------|-----------------------------|-------------------------|
| Requirement:    | FCC 15.107, class B; 15.207 |                         |
| Frequency (MHz) | QP Limits (dB $\mu$ V)      | AVG Limits (dB $\mu$ V) |
| 0.15 to 0.50    | 66 to 56                    | 56 to 46                |
| 0.50 to 5       | 56                          | 46                      |
| 5 to 30         | 60                          | 50                      |

### 7.2 Test Procedure

All conducted voltage measurements were made on each current-carrying conductor at the plug end of the EUT power cord or calibrated extension by the use of mating plugs and receptacles on the EUT and LISN/AMN if used. Equipment was tested with power cords that were normally used or that have electrical and shielding characteristics that were the same as those cords normally used. For those measurements using a LISN/AMN, the 50  $\Omega$  measuring port was terminated by a 50  $\Omega$  receiver or a 50  $\Omega$  resistive load. Hence all 50  $\Omega$  measuring ports of the LISN/AMN were terminated by 50  $\Omega$ .

If a screened room or chamber was used, the EUT was placed 40 cm from a conductive wall, with the wall at the lead of the EUT. If the test was being performed on an OATS or sheltered site, the vertical ground plane was placed 40 cm away from the rear of the EUT.

The excess length of the lead between the EUT and the LISN/AMN receptacle (or mains outlet where a LISN/AMN cannot be used) was folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length. If the EUT does not have a flexible power lead, then it was placed at a distance of 80 cm from the LISN/AMN (or mains outlet where a LISN/AMN cannot be used) and connected to it by a lead or appropriate connection no longer than 1 m. Measurements were made at the LISN/AMN end of this lead or connection

Conducted emission measurements were performed according to the procedures in ANSI C63.4 (2003)

Date of Test: November 1 to 3, 2006

FCC ID: UPWWSD2006

**7.3 Line Conducted Emission Data (15.107/207)**

**Standard:** FCC part 15.107 (Class B), 15/207  
**Company:** Weiland Sliding Doors  
**Job No.** 3106452LAX-002  
**Model Name:** WSD2006  
**Mode:** Transmitting

Measurement Uncertainty: 1.94dB  
 Temperature: 24°C  
 Relative Humidity: 49 %

Measurements made on selected frequencies from neutral conductor are given below:

| Frequency | AV     | AV Limit | Q. Peak | QP Limit | Margin |
|-----------|--------|----------|---------|----------|--------|
| MHz       | (dBμV) | (dBμV)   | (dBμV)  | (dBμV)   | (dBμV) |
| 0.207     | 34.4   | 53.5     | 34.9    | 63.5     | -19.1  |
| 0.354     | 25.5   | 49.0     | 41.4    | 59.0     | -17.6  |
| 22.1      | 34.8   | 50       | 35.4    | 60       | -15.2  |
| 24.0      | 36.9   | 50       | 37.1    | 60       | -13.1  |
| 27.0      | 37.3   | 50       | 37.8    | 60       | -12.7  |
| *28.0     | 49.2   | 50       | 49.3    | 60       | -0.8   |

Measurements made on selected frequencies from line conductor are given below:

| Frequency | AV     | AV Limit | Q. Peak | QP Limit | Margin |
|-----------|--------|----------|---------|----------|--------|
| MHz       | (dBμV) | (dBμV)   | (dBμV)  | (dBμV)   | (dBμV) |
| 0.207     | 34.5   | 53.5     | 35.0    | 63.5     | -19.0  |
| 0.354     | 27.1   | 49.0     | 41.8    | 59.0     | -17.2  |
| 22.1      | 34.4   | 50       | 34.8    | 60       | -15.6  |
| 24.0      | 36.3   | 50       | 36.4    | 60       | -13.7  |
| 27.0      | 36.1   | 50       | 37.0    | 60       | -13.9  |
| *28.0     | 48.9   | 50       | 49.0    | 60       | -1.1   |

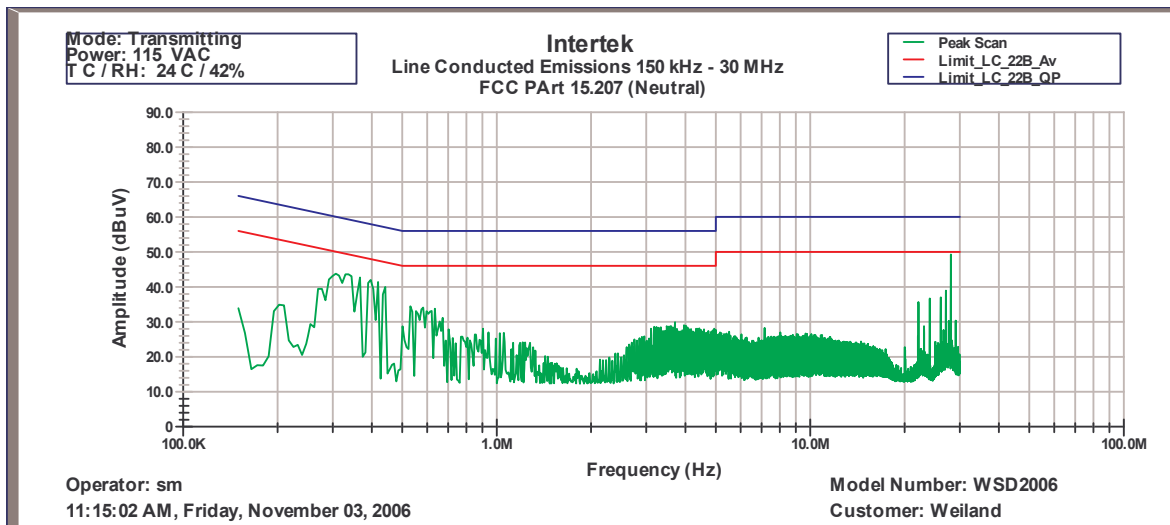
- Note 1: a) A complete scan from 0.15 - 30 MHz was made.  
 b) Analyzer setting: RBW = 9 kHz, VBW = 30 kHz  
 c) Detector mode: Quasi-peak and Average.  
 d) All other measurements were more than 20 dB below the limit lines.  
 e) Numbers with a minus sign in margin column are below the limit.

The next two pages are the peak scan made on line and neutral conductors

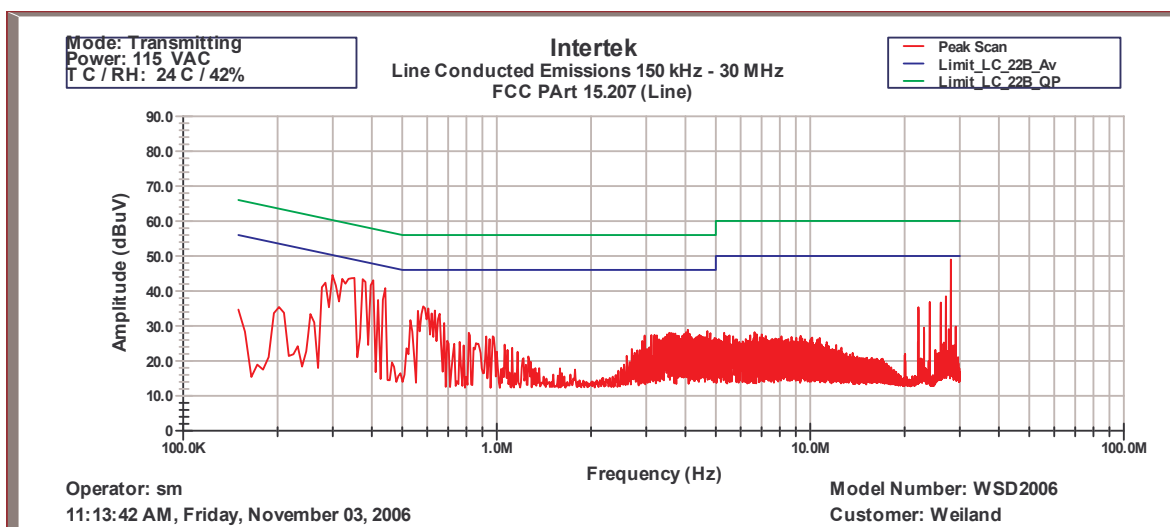
|                    |                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Test Result</b> | Passed with 0.8 dB margin at 28.0 MHz.<br>* The measurement 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 high probability that the product tested complies with the specification limit |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Date of Test: November 1 to 3, 2006

FCC ID: UPWWSD2006



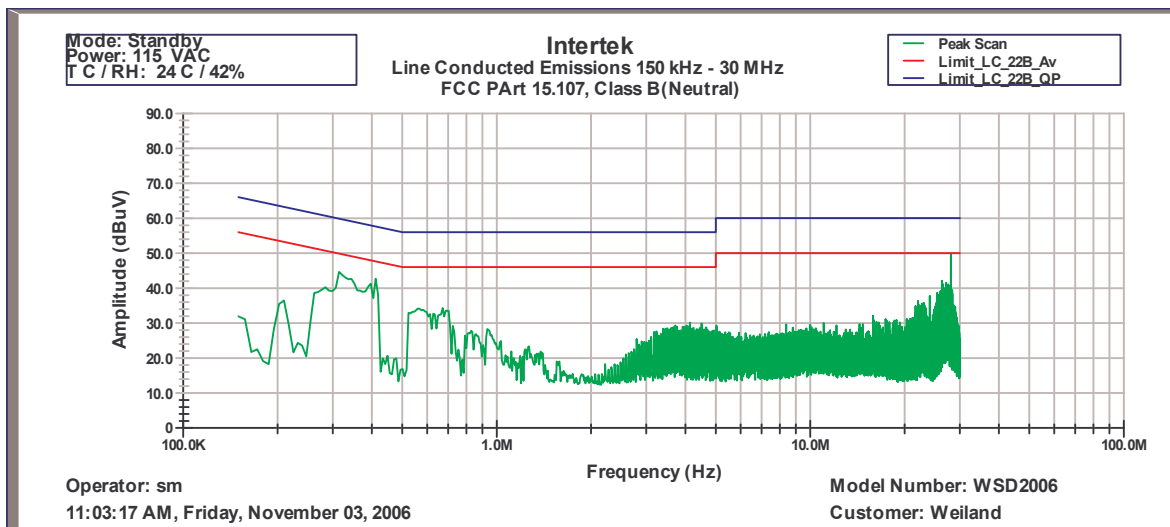
Line Conducted Emission on Neutral Conductor (Transmitting mode)



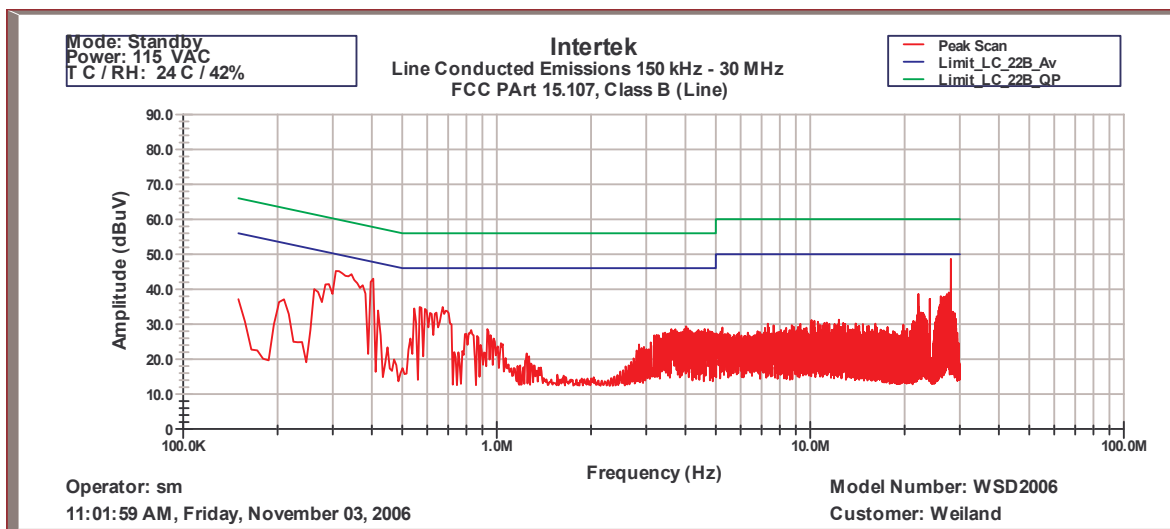
Line Conducted Emission on Line Conductor (Transmitting mode)

Date of Test: November 1 to 3, 2006

FCC ID: UPWWSD2006



Line Conducted Emission on Neutral Conductor (Standby mode)



Line Conducted Emission on Line Conductor (Standby mode)

Date of Test: November 1 to 3, 2006

FCC ID: UPWWS2006

**8.0 TEST EQUIPMENT**

Measurement equipment used for emission compliance testing utilized the equipment on the following list:

**Receivers / Spectrum Analyzers**

| DESCRIPTION                   | SERIAL NO. | LAST<br>CAL<br>DATE | CAL<br>DUE | TICK<br>IF<br>USED |
|-------------------------------|------------|---------------------|------------|--------------------|
| HP 8546A Receiver RF Section  | 3549A00261 | 11/22/05            | 11/22/06   | X                  |
| HP 85460A RF Filter Section   | 3448A00265 | 11/22/05            | 11/22/06   | X                  |
| Tile Software                 | Rev. 3.0 G | N/A                 | N/A        | X                  |
| R & S FSP40 Spectrum Analyzer | 100027     | 2/21/06             | 2/21/07    | X                  |

**Antennas / Preamplifiers**

| DESCRIPTION                          | SERIAL NO. | LAST<br>CAL<br>DATE | CAL<br>DUE | TICK<br>IF<br>USED |
|--------------------------------------|------------|---------------------|------------|--------------------|
| Comp Power Biconical Antenna AB 900  | 15299      | 3/13/06             | 3/13/07    | X                  |
| Com-Power AL-100 Logperiodic Antenna | 16055      | 5/03/06             | 5/03/07    | X                  |
| ETS Lindgren 3115 Horn Antenna       | 00031626   | 3/13/06             | 3/13/07    | X                  |
| Agilent RF Preamplifier 8447D        | 2944A101   | 1/08/06             | 1/09/07    | X                  |
| HP RF Preamplifier 8449B             | 30080116   | 1/17/06             | 1/17/07    | X                  |

**Artificial Mains Networks/Absorbing Clamps**

| DESCRIPTION            | SERIAL NO. | LAST<br>CAL<br>DATE | CAL<br>DUE | TICK<br>IF<br>USED |
|------------------------|------------|---------------------|------------|--------------------|
| EMCO 3816/2NM 16A LISN | 1039       | 8/25/06             | 8/25/07    |                    |
| EMCO 3825/2 25 A LISN  | 2527       | 8/17/06             | 8/17/07    | X                  |