



Engineering Solutions & Electromagnetic Compatibility Services

**FCC 15.231, 15.207 Test Data**

**for**

**Model: 319.5 MHz Transmitter**  
(RTL barcode: 20740)

**for**

**Resolution Engineering**

**RTL Project Number 2012210**

**Test Engineers:      Dan Baltzell**  
**Jon Wilson**

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These tests are accredited and meet the requirements of ISO/IEC 17025 as verified by ANSI-ASQ National Accreditation Board/ACLASS. Refer to certificate and scope of accreditation AT-1445.

**Description of testing presented in this test report**

The data and limits presented in this report are for peak emissions limiting per 15.231(b)(2) which references 15.35(b), and peak limiting for restricted bands per 15.209(e) which again references 15.35(b)(2), as procured by Resolution Engineering. No average data is presented in this report.

**Radiated Emissions Test Data – FCC Limits / 3m Distance**

Emission Frequency (MHz)	Test Detector	Antenna Polarity (H/V)	Analyzer Reading (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pass/Fail
319.510	Peak	V	57.0	27.1	84.1	95.9	-11.8	Pass
639.010	Peak	H	63.9	-4.7	59.2	75.9	-16.7	Pass
958.510	Peak	H	50.9	-1.4	49.5	75.9	-26.4	Pass
1278.018	Peak	H	62.9	3.7	66.6	74.0	-7.4	Pass
1597.517	Peak	H	51.9	7.3	59.2	74.0	-14.8	Pass
1917.017	Peak	V	49.5	11.7	61.2	75.9	-14.7	Pass
2236.660	Peak	V	68.1	-18.5	49.6	74.0	-24.4	Pass
2556.180	Peak	V	63.8	-18.9	44.9	75.9	-31.0	Pass
2875.710	Peak	H	70.2	-18.5	51.7	74.0	-22.3	Pass
3195.230	Peak	H	63.5	-17.7	45.8	75.9	-30.1	Pass

**Test Procedure**

Radiated emissions of the harmonics were tested at three meters. The EUT was tested in the three orthogonal planes with the receive antenna in both polarities. The emissions were maximized per ANSI C63.4:2003 8.3.1.2; that is, the measurement antenna height was varied between 1 and 4 m, and the EUT was rotated through 360° on a rotating turntable until the maximum emissions were found. Both horizontal and vertical measurement antenna polarizations were used. A resolution bandwidth of 100 kHz was used for frequencies less than 1000 MHz, and a resolution bandwidth of 1 MHz was used for frequencies greater than or equal to 1000 MHz. The video bandwidth was set to a value at least three times greater than the resolution bandwidth.


**EUT Disposition**

The EUT was adapted to continuously transmit for testing purposes.

**Radiated Emissions Test Equipment**

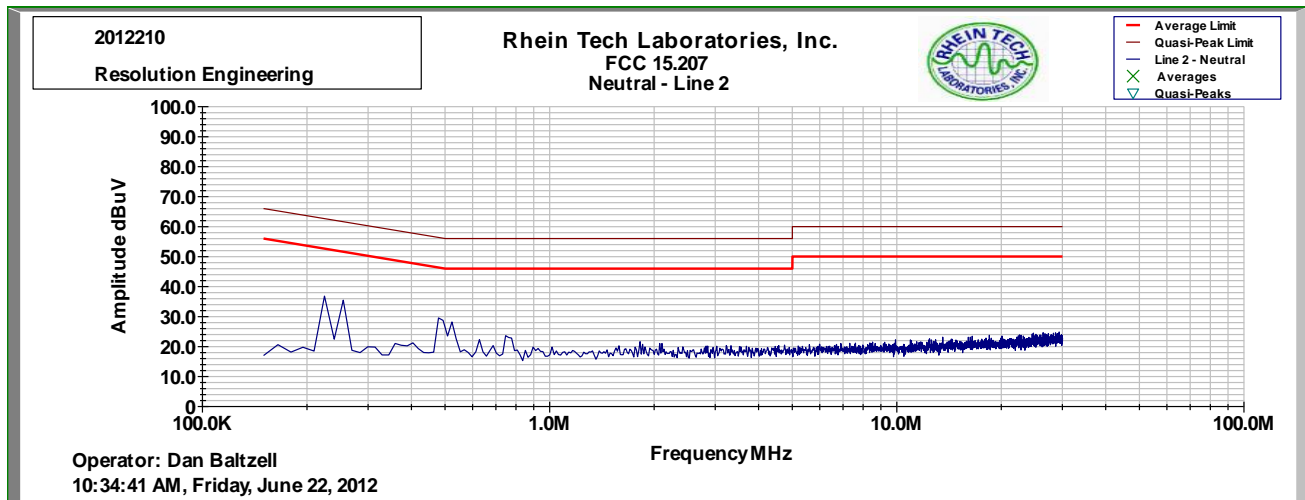
Barcode	Manufacturer	Model	Part Type	Serial Number	Calibration Due
900905	Rhein Tech Labs	PR-1040	OATS 1 Preamplifier 40dB (30 MHz – 2 GHz)	1006	7/14/12
900791	Chase	CBL6111B	Bilog antenna 30 MHz – 2000 MHz	N/A	1/31/13
900913	Hewlett Packard	85462A	EMI Receiver RF Section (9 KHz – 6.5 GHz)	3325A00159	8/17/12
900914	Hewlett Packard	85460A	RF Filter Section, 100 KHz to 6.5 GHz	3330A00107	8/17/12
900772	EMCO	3161-02	Horn Antenna 2 - 4 GHz	9804-1044	4/19/14
Emissions Testing Software	Rhein Tech Laboratories, Inc.	Automated Emission Tester	Rev. 14.0.2	N/A	N/A

**Test Personnel:**

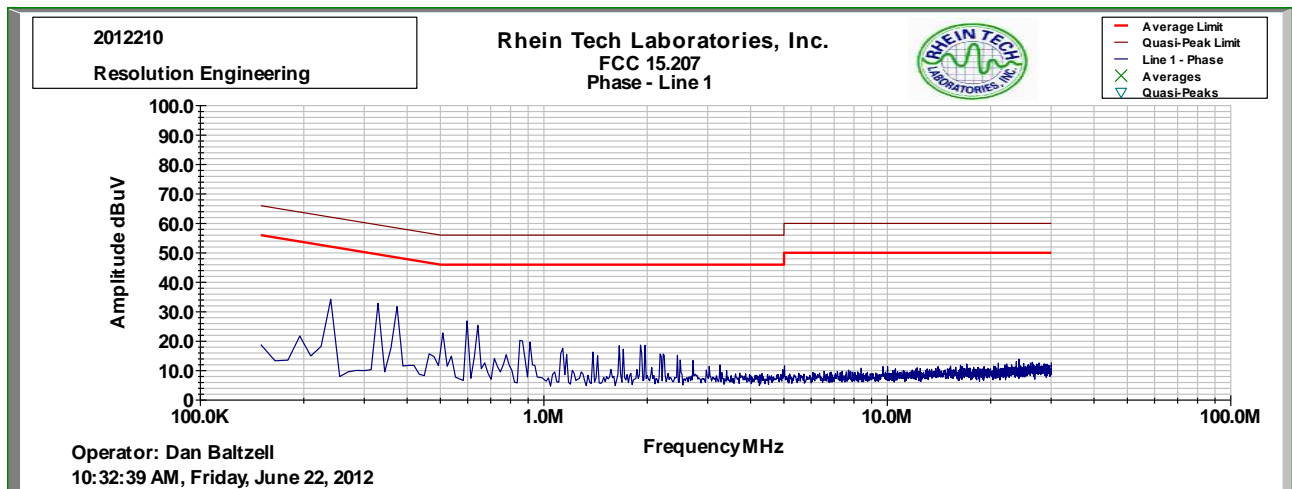
Jon Wilson		July 13, 2012
Test Engineer	Signature	Date of Test

### Conducted Line Emissions Test Data – FCC Limits

(Neutral)



(Phase)



**Result: Pass**

#### Test Procedure

The power line conducted emission measurements were performed in a Series 81 type shielded enclosure manufactured by Rayproof. The EUT was placed on a wooden table. Power was fed to the EUT through a 50-ohm/50 microhenry LISN. The 50-ohm output of the EUT LISN was connected to the spectrum analyzer input through a Solar 100 kHz high-pass filter. The filter is used to prevent overload of the spectrum analyzer from noise below 100 kHz. Conducted emission levels were measured on each current-carrying line with the spectrum analyzer operating in the CISPR quasi-peak mode (or peak mode if applicable). The analyzer's 6 dB resolution bandwidth was set to 9 kHz. The video bandwidth was set to a value at least three times greater than the resolution bandwidth. Average measurements are performed in linear mode using a 9 kHz resolution bandwidth and a 1 Hz video bandwidth. The frequency spectrum was scanned from 150 kHz to 30 MHz.

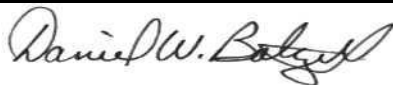
**EUT Disposition**

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**Conducted Line Emissions Test Equipment**

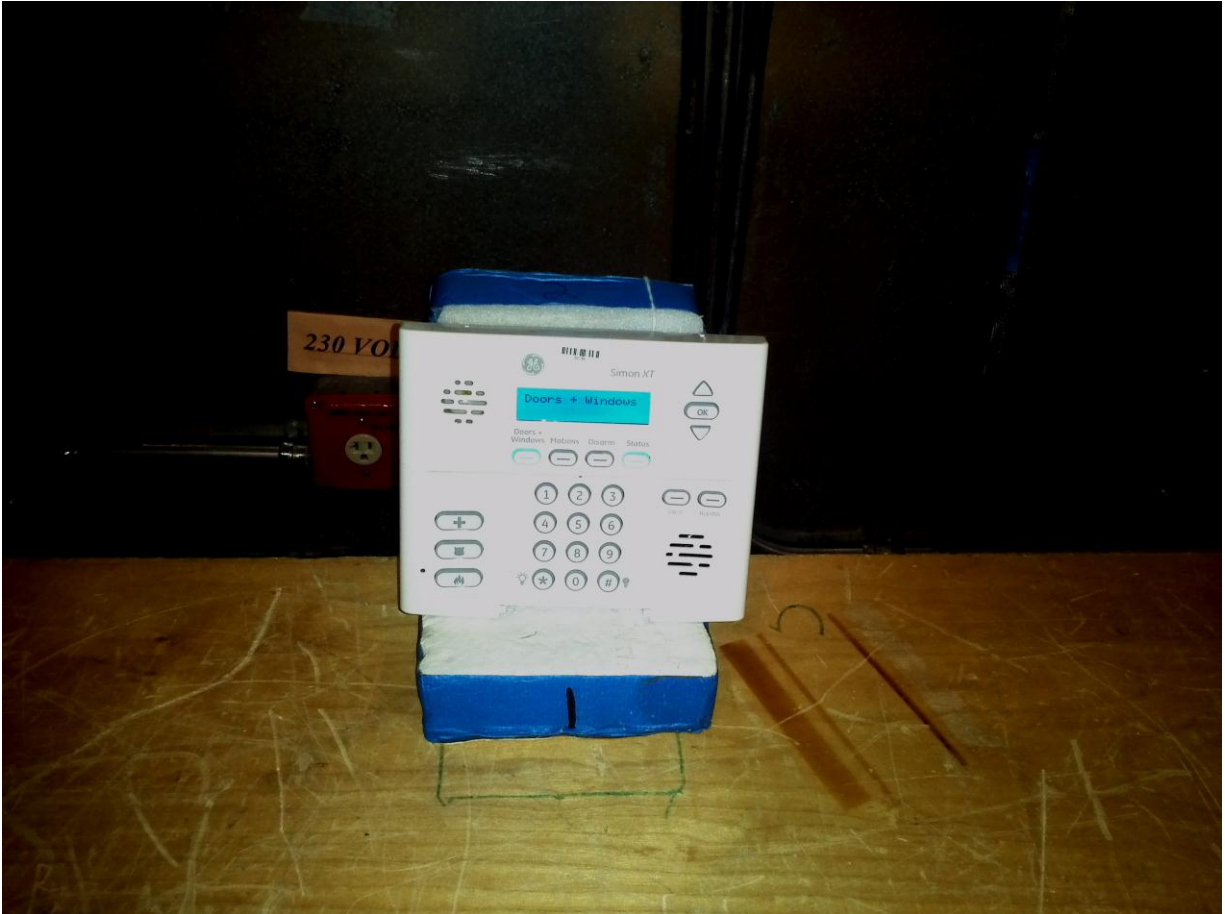
Barcode	Manufacturer	Model	Part Type	Serial Number	Calibration Due
900968	Hewlett Packard	8567A	Spectrum Analyzer (100 Hz-1.5GHz)	1006	11/17/2012
900970	Hewlett Packard	85662A	Spectrum Analyzer Display Section	N/A	11/17/2012
900339	Hewlett Packard	85650A	Quasi-Peak Adapter	3325A00159	11/17/2012
900728	SOLAR	8130	FILTER	947305	7/14/12
901083	AFJ International	LS16/110VAC	16A LISN	9804-1044	12/1/2012
N/A	Quantum Change	Tile!	4.0.A.8	N/A	N/A

**Test Personnel:**

Daniel Baltzell		June 22, 2012
Test Engineer	Signature	Date of Test

## Test Configuration Photographs

### Conducted Emissions - Front



### Conducted Emissions - Rear





**Radiated Emissions – Front**





### Radiated Emissions – Rear



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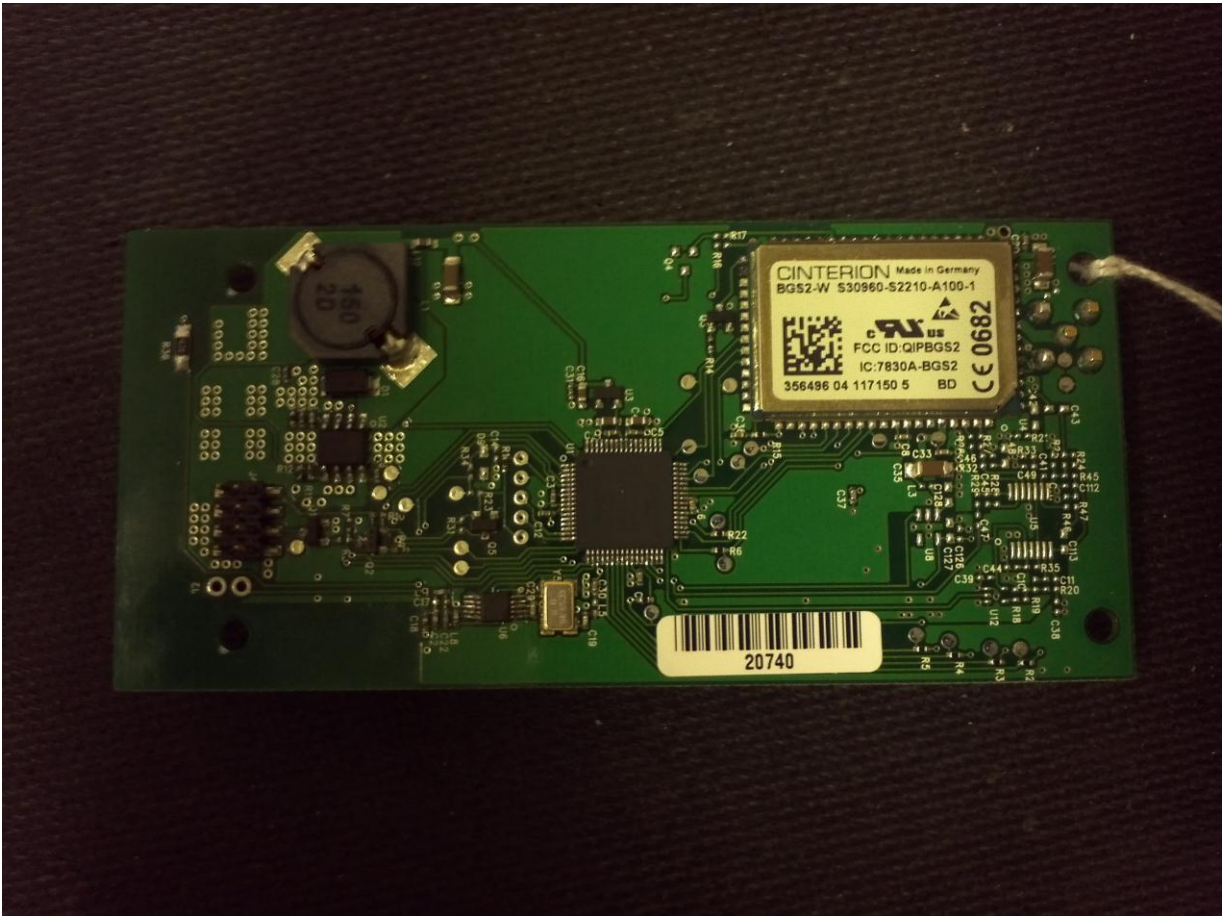
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Standards: FCC Part 2, 15  
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### EUT Photographs



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