RHEIN TECH LABORATORIES, INC.

Engineering Solutions & Electromagnetic Compatibility Services

FCC 15.231 Radiated Test Data

for

Model: RE310P
433 MHz PIR
(RTL barcode: 20058)

for

Resolution Engineering

RTL Project Number 2011044

Test Engineer: Jon Wilson

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.

Testing Represented in Report

The data and limits presented in this report are for radiated emissions 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. Data is also presented for spurious, non-harmonic radiated emissions per 15.209.

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
325.453	Qp	V	41.1	-14.6	26.5	46.0	-19.5	Pass
420.353	Qp	V	33.7	4.9	38.6	46.0	-7.4	Pass
433.95*	Pk	H	66.1	30.5	96.6	100.8	-4.2	Pass
542.413	Qp	V	40.6	-5.1	35.5	46.0	-10.5	Pass
651.274	Qp	H	34.6	-6.9	27.7	46.0	-18.3	Pass
867.833	Pk	H	75.2	-4.6	70.6	80.8	-10.2	Pass
976.338	Qp	V	42.0	-5.2	36.8	54.0	-17.2	Pass
1301.773	Pk	H	67.1	2.4	69.5	74.0	-4.5	Pass
1735.693	Pk	V	54.8	6.0	60.8	80.8	-20.0	Pass
2169.605	Pk	V	79.2	-3.4	76.4	80.8	-4.4	Pass
2603.525	Pk	V	76.1	-2.2	73.9	80.8	-6.9	Pass
3037.445	Pk	V	63.3	-1.6	61.7	80.8	-19.1	Pass
3471.365	Pk	H	69.6	-1.5	68.1	80.8	-12.7	Pass
3905.285	Pk	H	49.8	0.0	49.8	74.0	-24.2	Pass
4339.205	Pk	H	51.9	4.6	56.5	74.0	-17.5	Pass

** fundamental*

Test Procedure

Radiated fundamental and spurious emissions 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 – 2011 testing

Part	Manufacturer	Model	Serial Number	RTL Bar Code	Calibration Due Date
Amplifier (20 MHz-2 GHz)	Rhein Tech Laboratories, Inc.	PR-1040	900905	900905	4/10/2011
Bilog Periodic Antenna (25 MHz-2 GHz)	Antenna Research Associates, Inc	LPB-2520	1037	900724	7/12/2011
EMI Receiver RF Section (9 kHz-6.5 GHz)	Hewlett Packard	85462A	3325A00159	900913	6/8/2011
RF Filter Section (100 kHz-6.5 GHz)	Hewlett Packard	85460A	3330A00107	900914	6/8/2011
Spectrum Analyzer	Hewlett Packard	8596EM	3826A00144	901215	1/13/2012
Amplifier	RTL	1003	N/A	901364	2/22/2012
Horn Antenna 2-4 GHz	EMCO	3161-02	9804-1044	900772	6/13/2012
Horn Antenna 4-8.2 GHz	EMCO	3161-03	9508-1020	900321	6/13/2012
Emissions Testing Software	Rhein Tech Laboratories, Inc.	Automated Emission Tester	Rev. 14.0.2	N/A	N/A

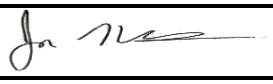
Test Personnel:

Jon Wilson		April 2, 2011
Test Engineer	Signature	Date of Test

Radiated Emissions Test Equipment – 2013 testing

Part	Manufacturer	Model	Serial Number	RTL Bar Code	Calibration Due Date
Amplifier (20 MHz-2 GHz)	Rhein Tech Laboratories, Inc.	PR-1040	900905	900905	8/20/2013
Bilog Periodic Antenna (25 MHz-2 GHz)	Schaffner Chase	CBL6112	2099	900791	2/2/2014
EMI Receiver RF Section (9 kHz-6.5 GHz)	Hewlett Packard	85462A	3325A00159	900913	9/20/2013
RF Filter Section (100 kHz-6.5 GHz)	Hewlett Packard	85460A	3330A00107	900914	9/20/2013
Spectrum Analyzer	Rohde & Schwarz	FSU	1166.1660.50	901581	6/4/2013
Amplifier (1 GHz–26.0 GHz)	Rhein Tech Laboratories, Inc.	PR-1042	N/A	901364	9/28/2013
Horn Antenna (2.0-4.0 GHz)	EMCO	3161-02	9804-1044	900772	4/20/2015
Horn Antenna (4.0-8.2 GHz)	EMCO	3161-03	9508-1020	900321	4/20/2015
Emissions Testing Software	Rhein Tech Laboratories, Inc.	Automated Emission Tester	Rev. 14.0.2	N/A	N/A

Test Personnel:

Jon Wilson		April 4, 2013
Test Engineer	Signature	Date of Test

FCC/IC Cross Reference

FCC 15.231(b)(2)	RSS-210 Issue 8 A1.1
FCC 15.35(b)	RSS-Gen Issue 3 7.2.3
FCC 15.205	RSS-Gen Issue 3 7.2.2
FCC 15.209	RSS-Gen Issue 3 7.2.5

Test Configuration Photographs

X-axis

Y-axis

Z-axis

EUT Photograph